



Artificial Intelligence Leadership:

How Trust and Fairness Perceptions impact Turnover Intentions
through Psychological Safety

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Dissertation written under the supervision of Filipa de Almeida

Dissertation submitted in partial fulfilment of requirements for the MSc in
Management with Specialization in Strategy and Entrepreneurship, at the
Universidade Católica Portuguesa, 15 June 2020.

Abstract

Title: Artificial Intelligence Leadership: How Trust and Fairness Perceptions impact Turnover Intentions through Psychological Safety

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Artificial intelligence agent's intervention in decision making at organizational environments has been increasing rapidly. These agents bring advantages in decision making due to their objectivity, efficiency, and superior capacity of information processing while lacking human weaknesses such as fatigue or self-interest. However, their perception by organizational employees might be less optimistic, as artificial intelligence leaders might be perceived as less fair and just. This dissertation intends to study the effects that this new type of leadership has on employees' turnover intentions, an important variable as high levels of voluntary turnover cause several losses for companies both in terms of cost increase and loss of talented human resources. Additionally, I propose the decrease in employee's psychological safety to mediate this relationship. Finally, I propose a way to overcome this effect by manipulating the perceptions of trust and justice of these leaders, in order to try to counter the negative effect of non-human leadership. The results of this study revealed a significant effect of the leader agent on the employees' exit intentions as well as on their psychological safety, including as a mediator of the former. Regarding the moderation of trust and justice perceptions, the results showed that these testimonials have a direct effect on psychological safety, and an indirect one in turnover intentions through psychological safety.

Keywords: Artificial Intelligence, Artificial Intelligence Leadership, Turnover Intentions, Psychological Safety, Trust, Fairness

Sumário

Título: Liderança por Inteligência Artificial: Como percepções de Confiança e Justiça afetam as Intenções de Saída através da Segurança Psicológica

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A intervenção de agentes de inteligência artificial na tomada de decisão em ambientes organizacionais tem aumentado rapidamente. Estes agentes trazem vantagens para a tomada de decisão devido à sua objetividade, eficiência e superior capacidade de processamento de informação, ao mesmo tempo que não possuem fragilidades humanas tais como fadiga ou interesses próprios. No entanto, a sua percepção por parte dos funcionários da organização pode ser menos otimista, pois os líderes de inteligência artificial podem ser vistos como menos justos e confiáveis. Esta dissertação pretende estudar os efeitos que este novo tipo de liderança tem sobre as intenções de saída dos funcionários, uma variável importante, já que altos níveis de rotatividade voluntária causam várias perdas para as empresas, tanto em termos de aumento de custos quanto de perda de recursos humanos talentosos. Além disso, proponho a diminuição da segurança psicológica dos funcionários para mediar esta relação. Por fim, proponho uma forma de superar esse efeito, manipulando as percepções de confiança e justiça desses líderes, a fim de tentar combater o efeito negativo de uma liderança não humana. Os resultados deste estudo revelaram um efeito significativo do agente de liderança nas intenções de saída dos funcionários e em sua segurança psicológica, inclusive como mediador do primeiro. No que se refere à moderação das percepções de confiança e justiça, os resultados mostraram que estes têm um efeito direto na segurança psicológica, e um efeito indireto nas intenções de saída através da segurança psicológica.

Palavras-chave: Inteligência Artificial, Liderança por Inteligência Artificial, Intenção de Saída, Segurança Psicológica, Confiança, Justiça

Acknowledgements

This dissertation is the result of a path of academic and personal development. A journey full of achievements and learnings, but made of ups and downs. It would not have been possible to reach this point without the support of those by my side. So, I would like to thank all those who have participated in this journey.

Special thanks to:

Dr. Filipa de Almeida, without who this dissertation would not have been possible to realise. Thanks for the excellent supervision, for the availability and constant dedication, for all the knowledge sharing, clarification of doubts and help in all the steps of this dissertation.

My mother who always motivated, guided and supported me and with whom I shared all the moments of sadness, anxiety and who endured me in difficult days, but who also celebrated with me every small victory and the happiest moments of this journey.

My family, friends and colleagues for all the support and for all the moments of rest and amusement, essential to my well-being.

Dr. Patricia Duarte, for all the support, knowledge sharing, help and clarification of all issues during the execution of this thesis. |

Thank you all.

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Glossary

α	The probability of making Type I error; Cronbach's index of reliability
b	Estimated value of unstandardized regression coefficient
&	And
AI	Artificial Intelligence
ANOVA	Analysis of Variance
CH	Computer-Human
CI	Confidence Interval
df	Degrees of freedom
DV	Dependent Variable
F	F distribution, fishers F ratio
IoT	Internet of Things
IV	Independent Variable
M	Sample mean
MD	Mean Difference
n	Number of cases per condition
N	Total number of cases
p	p-value
r	Estimation of the Spearman correlation coefficient
R^2	Multiple correlation squared; measure of strength of association
RQ	Research Question
SD	Standard Deviation
SE	Standard Error

1. Introduction

We live in a world of constant and deep changes at the organizational level. Managers need to develop and enhance dynamic strategic capabilities that enable them to overcome the treats that it encompasses. In order to describe this modern world, managerial leadership commonly uses the acronym VUCA, to describe the volatility, uncertainty, complexity, and ambiguity of our current world (Bennett & Lemoine, 2014). It was within this scenario that the fourth industrial revolution has born. Also known as the digital industry revolution, or Industry 4.0, it was driven by technological innovations, with deep effects both on production systems and businesses. By integrating cloud computing, mobile internet, the Internet of Thing (IoT), big data analytics, and cyber-physical systems, companies can control all operations and network all steps of the value chain. This networking system, together with the use of smart robotics and artificial intelligence, allows companies to improve effectiveness and efficiency at all steps of an industry's operations (Lee, Davari, Singh, & Pandhare, 2018).

One of the fundamentals of the fourth industry revolution is artificial intelligence (AI). It is defined as “a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Haenlein & Kaplan, 2019, p.5). Despite being a recent development, and consequently not widely used within companies, AI adoption is growing and is expected to substantially increase in the next years (Chui & Malhotra, 2018). At first, only mechanical tasks like analyzing data, updating files, or sending marketing messages were replaced by computer agents but nowadays, AI has spread across businesses and departments (Huang, Rust, & Maksimovic, 2019). While its adoption is still very modest, the results show that meaningful rewards and value creation are brought to those who did it (Chui & Malhotra, 2018; Fountaine, McCarthy, & Saleh, 2019). Aware of AI competitive opportunities, managers are increasingly joining forces with AI across businesses, in what is called a collaborative intelligence, in order to optimize operations and management decisions (Wilson & Daugherty, 2018).

Recently, a new type of AI functions started being studied: AI leadership. It refers to the process through which a computer agent exerts hierarchical influence over humans in working contexts. These AI agents perform leadership functions within organizations over human subordinates, fulfilling the instructions of upper management (Wesche & Sonderegger, 2019). AI leadership is a computer-human type of leadership that foresees that technology can do more than just help managers to lead subordinates; it can lead humans itself by moving managerial decisions to algorithms. Humans have bounded rationality, suffering from

numerous known biases (e.g. confirmation bias, availability and representativeness heuristics; Kahneman, 2003). As such, the integration of AI, with its ability to make decisions in an efficient and optimized way based on data analysis, might lead to less biased decision-making. This is one of the reasons why AI decisions are expected to be gaining relevance in the business world (Wesche & Sonderegger, 2019).

However, adopting AI leadership can be a challenge. First, the adoption of AI systems demands the restructuring of employees' tasks and organizational operations and, secondly, it is extremely important to understand how it would impact people's behaviors and feelings in order to enjoy its advantages and overcome the existing barriers. It becomes, then, of the utmost importance to assure employees are comfortable with this change.

One of the biggest reasons to understand the impact of organizations decisions on employees, is a very important and up to date problem: turnover. Since the beginning of the XX century, turnover has been deeply studied due to the importance of its negative impact on companies. High turnover rates bring monetary and non-monetary costs for companies. Monetary costs include, for example, selection and recruitment costs, training and development costs and, indirect costs due to the low productivity of new employees. On the other hand, non-monetary costs include the bad reputation in the market due to spread of reputation and low morale between other staff members, as well as loss of knowledge and know-how of the employees that leave the company and even possible consumers loss (Mobley, 1982; Staw, 1980).

Humans seem to offer some resistance to AI (e.g. Dietvorst, Simmons, & Massey, 2014). In particular, people seem to not trust AI decisions and perceive them as more unfair, especially in tasks that are usually perceived as particularly suited to humans (Lee, 2018). Therefore, the adoption of AI leaders can negatively impact how people feel within organizations that adopt this type of leadership, leading employees to leave those companies. Indeed, one possible reason for employee's turnover, is the lack of or low levels of psychological safety within the company (Chandrasekaran & Mishra, 2012). Psychological safety is known as "the shared belief held by members of a team that the team is safe for interpersonal risk" (Edmondson, 1999, p. 350). In a psychological safe team, employees feel secure to express ideas, give honest feedback, and take risks what will positively impact employee's learning process and performance (Edmondson & Lei, 2014). Leadership is one of the factors that play a fundamental role on employee's psychological safety feelings within a company (Edmondson & Lei, 2014; Newman et al., 2017) and, also in employees' turnover intentions (Cotton & Tuttle, 1986; Yanchus, Periard, Moore, Carle, & Osatuke, 2015). Does AI

leadership adoption impact turnover intentions? If so, does psychological safety explain it? And if that is the case, how can we overcome that? That is what this thesis is about.

1.1 Problem Statement

In order to better understand how AI leadership would influence employees' psychological safety and, consequently, turnover, I investigated the effect of human versus AI leadership on turnover intentions, and the potential mediating effect of psychological safety. In addition, as perceptions of trust and fairness in AI agents can be rather low (Lee, 2018), and are influencing factors of psychological safety and turnover intentions (Ortiz-Walters, 2009; Li & Tan, 2012; Schaubroeck et al., 2011; Ferrin, 2002; Simons & Roberson, 2003), I manipulated these perceptions in a managerial actionable manner to see whether this would moderate that relationship. Therefore, this research intends to answer the question: "How does AI leadership influence employee's psychological safety and turnover intentions?". This problem statement can be divided into three main research questions:

RQ1: Does AI leadership negatively influence employee's psychological safety?

RQ2: Does AI leadership increase employee's turnover intentions?

RQ3: Do trust and fairness perceptions of AI leadership moderate the impact of AI leadership on psychological safety and turnover intentions?

1.2 Relevance

This thesis contributes to the existing literature on leadership and AI by combining both concepts together in an original manner. More concretely, it integrates a new type of leadership, through AI adoption in organizations, and examines how that it would impact employees' psychological safety and, consequently, turnover intentions. Additionally, it contributes to companies that will incorporate AI agents in leadership functions by raising awareness of the existing risks of implementing such procedures, and aiding the development of improved strategies to overcome them, so they can consequently, successfully benefit from the opportunities for managerial leadership AI provides.

1.3 Structure

In order to accomplish this thesis objective, an experimental study was conducted. After this brief introduction, this master thesis will follow with a literature review of AI, AI leadership, acceptance of AI leadership, fairness and trust perceptions of AI leadership,

psychological safety, and turnover intentions. Next, a methodology chapter follows, which includes the research strategy and design, participants and procedure description, and pretests presentation. Then, results will be presented, analyzed and discussed. Next, I follow with the main conclusions, as well as the academic and managerial implications. Finally, limitations and future research ideas are discussed.

2. Literature Review

2.1 Artificial Intelligence

Artificial intelligence (AI) is commonly defined as “a system’s ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation” (Haenlein & Kaplan, 2019, p. 5). Its birth as a concept was accomplished in 1956 by AI fathers: Marvin Minsky, John McCarthy, Herbert Simon and Allen Newell alongside with Claude Shannon and Nathaniel Rochester. They defined AI at the Dartmouth Summer Research Project on Artificial Intelligence, at Dartmouth College in New Hampshire, US, as "the ability of machines to understand, think, and learn in a similar way to human beings, indicating the possibility of using computers to simulate human intelligence" (Pan, 2016, p. 410).

The evolution of AI capabilities, from merely mechanical and repetitive tasks to tasks that require analytical and thinking capabilities lead to the rise of what is known as “thinking economy” (Huang, et al., 2019). It describes the state in which humans are mostly required to perform tasks based on “processing, analyzing, and interpreting information; planning and prioritizing work; making decisions; and solving problems” (Huang et al., 2019, p. 45) and wages are endorsed accordingly, leaving repetitive tasks characteristics of the previous “mechanical economy” to be performed by AI agents (Huang et al., 2019). Since recent technological developments enabled AI agents to perform those thinking tasks, we are now starting to enter in the “feeling economy”, in which humans are supposed to and valued by performing tasks that require communication skills and the ability to establish interpersonal relationships, which are mandatory for jobs in which it is necessary to exert influence over others (Huang et al., 2019).

The utilities of AI keep increasing and, as such, many organizations worldwide have been increasingly adopting AI in a very early form, following what seems to be a clear value creation across industries and sectors (Chui & Malhotra, 2018). Multiple functions within businesses are now employing AI, namely, service operations, product development, marketing and sales,

supply chain, human resources, strategy, finance, and, with the most meaningful rewards, manufacturing and risk (Chui & Malhotra, 2018). Most companies that are creating, or planning to create in the near future, AI strategic plans, see in AI the benefit of, among others, improving their current products or creating new ones, optimizing their internal operations, designating workers to more creative tasks by automating functions and making better decisions within the organization (Davenport & Ronanki, 2018).

Despite the positive indicators regarding AI systems implementation in organizations, companies still do not widely use it in their operations (Chui & Malhotra, 2018). This happens especially due to existing barriers, from which the lack of a clear strategy, integration issues, lack of talented employees, and expensive technologies to implement AI strategies and practices in a way that enables them to fully enjoy AI value creation at scale are the main ones (Chui & Malhotra, 2018; Davenport & Ronanki, 2018). However, it is expected that companies' investment in AI, that is currently only a small fraction of companies' budget, will considerably increase in the next years, and will be spread across businesses and internal departments (Chui & Malhotra, 2018).

The AI evolution also led to changes in the way organizations manage and lead employees, due to a power shift caused by a realignment of the decision-making process (Duchessi, O'Keefe & O'Leary, 1993). Algorithms are increasingly intervening more in the decision-making process of companies. Managerial decisions, which are usually characterized by uncertainty, equivocality, and complexity can now benefit from the intervention of AI agents (Jarrahi, 2018). AI has proven to outperform humans in situations that require processing high levels of information and variables at an extremely high speed and in a rigorous way, decreasing the complexity of these situations, and to be objective and free of self-interested agendas, as it is typically not the case with humans (Jarrahi, 2018). However, humans have emotional and social intelligence to deal with employees in organizational contexts, essential to persuade, motivate and establish interpersonal relations with others, therefore outperforming AI agents in these situations (Jarrahi, 2018). Therefore, humans have joined forces with AI and, to an ever-increasing extent, managerial decisions are being taken with the support of AI agents (Jarrahi, 2018; Wilson & Daugherty, 2018). Within organizations, AI supports managers to, among others, perform hiring tasks, evaluate employees' performance, predict employees' turnover intentions, distribute tasks among workers, and provide them with feedback (Lee, 2018).

The most recent forecasts regarding AI have pointed out to more emotional intelligent AI agents, capable of recognizing and express emotions (Kaliouby, 2017; Kosner, 2015; Mantas, 2019). Since AI has this exceptional ability to be constantly learning, improving and innovating,

it is expected that, in the future, tasks that are exclusively performed by humans in the “feeling economy”, will start also being performed by AI agents, following the previous evolutionary steps.

All these innovations and the prospects for growth in the areas of AI applicability within companies, as well as the growing adoption by companies, led to the recent study of a new AI role: leadership.

2.2 Artificial Intelligence Leadership

The exponential pace of technological progress moved AI from being perceived as a tool, to being studied as a partner in decision making and now also at a higher hierarchical level, meaning, situations in which AI performs management and leadership functions over humans.

Leadership has been a central subject in management literature for many generations. One of the most controversial subjects in this area has been the distinction between management and leadership. Despite disagreeing in the amount of overlap between the two, most researchers seem to agree that “a person can be a leader without being a manager and a person can be a manager without leading” (Yulk, 1989, p. 253). Leadership is commonly linked with the idea of someone, manager or not, to motivate, inspire, and influence people towards a common goal, while management refers to the process of planning, organizing, and exerting control over resources, including human resources, in order to achieve a common goal (Ivancevich, Konopaske, & Matteson, 2014). Organizations’ success and team’s productivity require having managers that are at the same time leaders, or, in other words, managerial leaders. Therefore, in this study I use the definition used by Yulk (1989) in his review of managerial leadership, “leadership is defined broadly in this article to include influencing task objectives and strategies, influencing commitment and compliance in task behavior to achieve these objectives, influencing group maintenance and identification, and influencing the culture of an organization” (Yukl, 1989, p. 253). In this sense, the terms leadership and management will be used interchangeably, and this study will refer to the overlap between the two concepts, in situations of decision-making, problem solving and communication within organizations (Ivancevich et al., 2014).

Hundreds of books, articles and theories were created in order to understand leadership from many perspectives (Yukl, 1989). Leadership studies and theories can be classified according to their main focus whether it is leaders’ behavior and/or traits, situational factors or

power-influence, but all of them refer to the leader as a human being. Now, by opposition, this type of organization role has started being analyzed from an AI perspective.

AI leadership refers to how AI agents exercise influence over human subordinates within an organization. According to Wesche and Sonderegger (2019), Computer Human (CH) Leadership is “a process whereby purposeful influence is exerted by a computer agent over human agents to guide, structure and facilitate activities and relationships in a group or organization” (p. 200).

When considering the adoption of AI in leadership functions, it is indispensable to understand its advantages and disadvantages. The positive aspects of AI leadership are mainly focused on the superior capability of these leaders to process high levels of information at an impossible speed for humans, deal with incomplete data more accurately, create more accurate forecasts, make assertive decisions, as well as the lack of human fragilities, like fatigue or getting sick, and needs such as to rest or socialize. All these leads AI agents to outperform humans in the decision-making in organizations (Chamorro-Premuzic & Ahmetoglu, 2016; Parry, Cohen, & Bhattacharya, 2016; Wesche & Sonderegger, 2019). Another strength of AI leadership, compared to human leadership, is its impartiality and absence of conflicts of interest, which have led to multiple situations of fraud and corruption within human leadership and to unfair treatments of subordinates, contributing also to more objective feedback and evaluation in AI leadership (Chamorro-Premuzic & Ahmetoglu, 2016; Wesche & Sonderegger, 2019).

AI leadership comes with disadvantages to organizations that adopt these leaders, however. The first includes the fact that AI leaders base their decisions on past data, and since there are not enough information for AI agents to make free of errors decisions, they can draw incorrect and biased conclusions from such data (Chamorro-Premuzic & Ahmetoglu, 2016). Another disadvantage of AI leadership is the lack of creativity and innovative capability, as well as intuition, sometimes needed to deal with unpredictable situations. Alongside, it may make decisions without considering ethical, cultural and legal perspectives if not programmed in that way (Wesche & Sonderegger, 2019; Chamorro-Premuzic & Ahmetoglu, 2016). The most commonly appointed disadvantage is, however, the fact that AI does not possess human emotions and it is, therefore, not able to recognize and act accordingly to them. This fact can hinder the fulfilment of social contact needs between subordinates and AI leaders (Chamorro-Premuzic & Ahmetoglu, 2016; Möhlmann & Henfridsson, 2019; Wesche & Sonderegger, 2019). Moreover, it can also lead humans not to trust these AI leaders, as emotional intelligence

is key to the establishment of trust between humans and AI agents (Fan, Scheutz, Lohani, McCoy, & Stokes, 2017; Mantas, 2019).¹

2.3 Subordinates acceptance of Artificial Intelligence Leadership

Recent studies have showed that humans are reluctant to accept AI leaders. Specifically, humans do not like collaborative human-machine situations in which the machine is more dominant (Li, Ju, & Nass, 2015). Humans also perceive human leaders more favorably than robot leaders (Gombolay, Gutierrez, Clarke, Sturla, & Shah, 2015) and follow robot leaders less than human leaders (Geiskkovitch, Cormier, Seo, & Young, 2016). What's more, they are more sensitive to AI than human errors, avoiding AI more than humans, after seeing them err – algorithm aversion (Dietvorst et al., 2014). This is the case even when AI outperforms humans (Dietvorst et al., 2014). Moreover, AI leadership is perceived as less transparent, and as leading to dehumanization by deficient social relationships. It also leads to the feeling of constant surveillance, which reduces productivity and employees' wellbeing at work (Möhlmann & Henfridsson, 2019).

Therefore, a strong barrier to the adoption of AI leaders is acceptance by their subordinates. If humans refuse to follow orders and directions from robotic leaders, this leadership cannot be effective and will, therefore, not be implemented. Due to this resistance that humans have in accepting AI leadership, it is important to investigate how human subordinates will perceive, feel, and behave towards AI leaders, and how that relationship will impact organizations. In this regard, Wesche and Sonderegger (2019) have adapted the TAM (The Technology Acceptance Model) of Davis (1986), to a Technology Acceptance Model that predicts humans' acceptance of computer leaders. This model refers that subordinates' perception of the system, that includes social influences, system characteristics (leadership, output, and experiences), and facilitating conditions, will lead to the subordinates' evaluation of the leadership system. In this step of the acceptance process, subordinates will evaluate leaders' legitimacy, how useful and how easy it is to use it, which will then predict followership behavior by subordinates. In a positive case, the outcomes of such acceptance can be subjective, like satisfaction, motivation, and well-being of subordinates, or objective, such as quantitative and qualitative performance rates (Wesche & Sonderegger, 2019). However, if subordinates perceive this leadership as

¹ However, recent forecasts predict that in the future AI agents will possess emotional capabilities, therefore this disadvantage of AI leadership might be temporary, and by the time AI leadership has spread across companies it might no longer exist (Kaliouby; 2017; Kosner, 2015; Mantas, 2019).

illegitimate, it will become ineffective and will lead to the exact opposite outcome, such as low performance, demotivation, and general dissatisfaction (Wesche & Sonderegger, 2019).

2.4 Fairness and Trust Perceptions of Artificial Intelligence Leadership

The leadership legitimacy, as a key element of subordinates' perception of the system, has an instrumental, a relational, and a moral component, meaning that, to perceive a leader as legitimate and, consequently, to accept that leadership, humans seek firstly competence, success, efficiency, and effectiveness, and secondly justice, benevolence, and community feelings. Lastly, integrity and ethics are critical in this acceptance process (Tost, 2011; Tyler 1997). It is then evident that fairness, perceived as "treating everyone equally or equitably based on people's performance or needs" (Lee, 2018, p. 4), as well as trust, "the attitude that an agent will help achieve an individual's goal in a situation characterized by uncertainty and vulnerability" (Lee, 2018, p. 4), are key elements in the acceptance of AI Leadership.

In this regard, Lee (2018) conducted an experiment in which he manipulated the decision-maker in a managerial position, so it could be human or algorithmic, in order to understand how it affected fairness and trust perceptions, as well as emotional responses to those decisions, depending on the type of task. It was found that task characteristics influence people's understanding of decisions taken by algorithms. When tasks required mechanical tasks, like work assignment and work scheduling, both human and algorithmic decisions were perceived as equally fair and trustworthy, and provoked similar emotional responses, despite having different causes. While for human decisions, the main factor for the perception of trust and justice is the authority they exercise, for algorithmic decisions, the perception of justice and trust is caused essentially by the idea of efficiency and objectivity. Human decisions were understood to cause positive emotional reactions in subordinates mainly due to social recognition factors, whereas algorithmic decisions were perceived by some as negative due to the perception of algorithms as tracking mechanisms and by others as positive due to seeing them as helpful tools in an organizational context. When tasks require human skills, like hiring and work evaluation, decisions made by non-human agents were perceived as less trustworthy, unfair, and caused a more negative response when compared to human decision-makers. Ironically, lower perceptions of fairness and justice resulted from the perception that algorithms lack intuition and subjectivity skills and negative emotional response from dehumanizing feelings (Lee, 2018).

Therefore, this study indicated that, considering leadership as an organizational role that requires tasks perceived as both human and machine tasks, trust and fairness (as well as emotional responses), are affected by the leadership agent, in this case, an AI agent.

2.5 Psychological Safety

Psychological safety is commonly defined as “a shared belief held by members of a team that the team is safe for interpersonal risk taking” (Edmondson, 1999, p. 350). Despite being the most known definition of psychological safety, it specifically refers to psychological safety at team level. At the individual level, Kahn’s (1990) defined psychological safety as “feeling able to show and employ one’s self without fear of negative consequences to self-image, status, or career” (Kahn, 1990, p. 708). In this study, I will focus on psychological safety at the individual level, since I am studying it within the leader-employee relationship. Having a psychological safe work environment is crucial for organizations, because it provides employees with feelings of being in a workplace in which it is safe to express ideas, experiment, give honest feedback, take risks, and employees feel that others respect them by being themselves and care about each other, without judging them for expressing different opinions (Edmondson, 1999). Such environment has direct and indirect impact on organizations’ performance, being that most studies have considered it as a mediator variable.

The most studied outcome of psychological safety is learning. In a psychological safe environment, employees feel free to experiment, engage in interpersonal risk and increases communication by influencing employees to discuss ideas and errors, report errors, and even to raise disagreement and pointing out errors to others, even superiors, which promotes learning (Newman et al., 2017). At the team level, Edmondson (1999) has showed that psychological safety affects team’s performance by mediating the effect between team structures (such as context support and team leader coaching) and team learning behavior, through which teams can improve performance by increasing adaptation and understanding of subjects by detecting and correcting mistakes. At an individual level psychological safety also mediates de effect of shared leadership and team learning (Liu, Hu, Li, Wang, & Lin, 2014). In line with learning outcomes, psychological safety is also an important antecedent of knowledge-sharing among employees² (Siemsen, Roth, Balasubramanin, & Anand, 2009), therefore also contributing to leaning outcomes.

² This influence is moderated by the level of confidence employees have on their own knowledge.

Psychological safety also explains other organizational behavior relationships. For instance, change-oriented leadership agents lead to higher voice behaviors, meaning the action of employees to speak up in case of dissatisfaction or possible improvement areas within organizations, through psychological safety feelings (Detert & Burris, 2007). Similarly, ethical leadership has a positive impact on employees' voice behaviors which is also (partly) explained through psychological safety (Walumbwa & Schaubroeck, 2009). Additionally, psychological safety influence employees' attitudes, leading to improving organizational commitment, work engagement, and desired work attitudes (Chen, Liao, & Wen, 2014; May, Gilson, & Harter, 2004). Finally, psychological safety is also associated with more innovative and creative employees, by promoting safe environment for employees to take risks and experiment without fear of being damaged (Carmeli & Gittell, 2009; Edmondson, Bohmer, & Pisano, 2001).

Due to psychological safety's wide range of organizational outcomes, researchers have also looked at its antecedents, which can be grouped in five main areas: supportive leadership behaviors, supportive organizational practices, relationship networks, team characteristics and individual and team differences (Newman et al., 2017). Regarding supportive leadership behaviors, by listening to subordinates, supporting them and giving them clear and direct orientations, leaders can influence employees to feel safe to take risks, to seek and provide honest feedback, which predicts strong organizational engagement, and consequently employees will return the organization with the same behavior and provide the same psychological safety environment to others (Newman et al., 2017). Leader inclusiveness, supportiveness, trustworthiness, and behavioral integrity, among others, are key antecedents to individual and team psychological safety (Newman et al., 2017). Likewise, leadership styles such as transformational, ethical, change-oriented, and shared leadership are positively related with psychological safety feelings among employees (Detert & Burris, 2007; Liu et al. 2014; Nemanich & Vera, 2009; Walumbwa & Schawbroeck, 2009). This indicates that having an AI leadership instead of a human one, can directly influence employees' psychological safety. Therefore, for all the previous considerations, I hypothesize the following:

H1: An AI Leadership will negatively influence employees' feelings of psychological safety.

Several studies have showed, as previously mentioned, that leaders' trustworthiness is a key antecedent of psychological safety (Madjar & Ortiz-Walters, 2009; Schaubroeck, Lam, & Peng, 2011). To my knowledge, there is no clear evidence published that perceptions

regarding leaders' fairness is associated with employee's psychological safety. However, since a psychological safe environment is known as being a workplace where it is safe to try, speak up ideas and honest feedback, and take risks without fear of retaliation, and having into consideration the strong relationship of psychological safety with leadership, it is arguably that if employees perceive their leader as fair in their role performance, employees will feel more psychological safe within their workplaces. Thus, I also hypothesize that:

H2: Trust and Fairness perceptions moderate the relationship between type of leadership and psychological safety, such than in conditions of high trust and fairness, the differential relationship between type of leader and psychological safety decreases, but under no information on trust and fairness, AI leadership will lead to lower psychological safety.

2.6 Turnover Intentions

Employee turnover is a central subject for companies and a proof of that is the amount of research done on this topic (Cotton & Tuttle, 1986; Steel & Lounsbury, 2009). Turnover can be divided in voluntary and involuntary turnover, the first being a situation in which an employee decides to leave the company for which they are currently working, while the second reflects situations in which it is the company who decides to dismiss an employee (Aldarmaki & Kasim, 2019; Long & Thean, 2011). While involuntary turnover is usually linked with lower performance employees, and therefore representing lower human capital losses for companies, also known as functional turnover, voluntary turnover is associated with high losses of human and social capital for firms, and the loss of talented employees, indispensable for companies to achieve competitive advantage, being, as such, also considered as dysfunctional turnover (Aldarmaki & Kasim, 2019 ; Long & Thean, 2011). In this study, I will focus on turnover intentions, the step ahead and the main determinant of actual incurring in turnover behavior, and consequently only on voluntary or dysfunctional turnover (Aldarmaki & Kasim, 2019; Mobley, 1979; Griffeth, Hand, & Meglino, 1979; Kashyap & Rangnekar, 2016; Long & Thean, 2011).

Turnover globally represents a problem for organizations, that see their cost increasing with this phenomenon. High levels of turnover represent costs for companies in many ways. Organizations tend to invest in employees' education and training in order to create competitive advantage and to improve both employees and organizational performance. Therefore, when an employee leaves the company, these factors are negatively affected and the company is required

to replace those employees, which leads to an increase in company's costs due to selection, recruitment and hiring costs of new employees, as well as the training and development costs to increase their skills and competences. Another indirect cost associated with hiring new employees is the loss of talented people and, consequently, a decrease on productivity, especially because voluntary turnover tends to happen with the most talented employees, taking with them experiences, knowledge and skills, all contributing to damaging a company's efficiency (Aldarmaki & Kasim, 2019; Mobley, 1982; Staw, 1980). This can be associated also with the learning curve process that shows that new employees will take some time until reaching the desired levels of productivity, as well as a decrease in the number of errors committed at the beginning. Moreover, this results in operational disruption, which happens when an important member of a team leaves the company and their role was essential for the well-functioning of the team or organization (Mobley, 1982; Staw, 1980). Additionally, turnover, particularly when high, also negatively influences organizations by promoting a general demoralization of organizational membership, leading to demotivation of teams, dissatisfaction of employees, low productivity and, consequently, an increase in turnover intentions in those that remain in the company (Mobley, 1982; Staw, 1980).

In order to prevent these negative consequences, it is indispensable for companies to understand the whole employee turnover process. Mobley (1979) also created a conceptual model of employee's turnover process, in order to fully understand what drives employees' turnover behaviors. This model distinguishes three types of antecedent variables of turnover, namely organizational, individual, and economic-labor market factors. Organizational factors include job content, conditions, organization's goals and values, organizational climate and practices, reward policies, and supervision, among others. Economic-labor market factors include unemployment, vacancies rates, and formal and informal communication, for instance, which form employee's labor market perceptions and expectations regarding alternative jobs. The third factor refers to individual characteristics and values which depend, on one hand, on occupational factors such as hierarchical level, skills and professionalism but also on personal factors such as age, education, personality and other social and economic individual characteristics. Once job satisfaction, current and alternative jobs utility, is assessed, intentions to quit are formulated, which is the immediate step before incurring in the actual turnover behavior (Mobley, 1979).

Regarding antecedents of turnover, these can also be divided into two main groups, external factors to the organization and work-related outcomes (Cotton & Tuttle, 1986). The first group includes job alternatives and unemployment rates, as well as syndical union

presence. Work-related causes involve remuneration and task repeatability, which are positively related to turnover, and factors such as job satisfaction, job performance, and role clarity, which are negatively related to turnover. Job dissatisfaction has been considered the main antecedent of turnover intentions in multiple aspects, namely, general dissatisfaction with the job, salary dissatisfaction, organizational dissatisfaction, team dissatisfaction, and leadership dissatisfaction (Cotton & Tuttle, 1986).

Multiple studies have focused on the relation between leadership and turnover intentions. For instance, leadership styles such as transformation and transactional styles negatively influence employees' turnover intentions (e.g. Aldarmaki & Kasim, 2019; Long & Thean, 2011; Wells & Peachey, 2011) and employees under a servant leadership style (Kashyap & Rangnekar, 2016), as well as under a charismatic leader (Azanza, Moriano, Molero, & Mangin, 2015), tend to have lower levels of turnover intentions.

Moreover, the satisfaction with the leader was demonstrated to directly influence voluntary turnover intentions, both decreasing it and mediating the relation between leaders' behaviors and styles with employee's turnover intentions (Wells & Peachey, 2011). Taking into consideration the previously mentioned resistance that humans have towards AI and the lack of faith on their capabilities over humans, we can assume that employees' satisfaction with AI leaders would be lower when compared to human leaders, therefore increasing employee's turnover intentions. Consequently, I hypothesize that:

H3: An AI Leadership will positively influence employees' turnover intentions.

In the same vein as with psychological safety, trust is also a very important trait of leaders which should be taken into consideration when considering the impact of leadership on turnover intentions, since turnover intentions are highly and negatively influenced by trust in leadership (Ferrin & Dirks, 2002). Likewise, fairness perceptions are negatively associated with employee's turnover intentions, both in terms of interpersonal and procedural justice, by the mediating effect of satisfaction with supervisor and employee commitment (Simons & Roberson, 2003). Therefore, I also hypothesize that:

H4: Trust and Fairness perceptions moderate the relationship between type of leadership and turnover intentions, such that in conditions of high trust and fairness, the differential relationship between type of leader and turnover intentions decreases, but under no information on trust and fairness, AI leadership will lead to higher turnover intentions.

2.7 Psychological Safety and Turnover Intentions

Despite the huge amount of research done on turnover antecedents, researchers have largely ignored psychological safety as being one of them. Only recently has the relationship between psychological safety and turnover intentions started being studied. Chandrasekaran and Mishra (2012) revealed a relationship between psychological safety and turnover, with turnover being one of the variables that explain the impact of psychological safety on team performance by reducing team stability and increasing talent loss within organizations (Chandrasekaran & Mishra, 2012). However, this study did not focus on the impact on psychological safety on turnover but rather on several reasons behind team performance for project teams, being one of those factors psychological safety (Chandrasekaran & Mishra, 2012). Soon after, however, the relationship between psychological safety and turnover was reinforced when a psychological unsafe environment was proven to increase employees' turnover intentions directly and also indirectly through satisfaction (Yanchus, Periard, Moore, Carle, & Osatuke, 2015). Moreover, psychological safety was found to mediate the relationship between job resources and affective commitment on turnover intentions (Kirk-Brown & Dijik, 2015). Lastly, in order to specifically test how psychological safety predicts turnover intentions, a recent study compared psychological safety with other variables already known to predict turnover intentions predictors, such as job satisfaction, employee engagement, organizational commitment, and job opportunities, among others (Groh, 2019). Psychological safety significantly predicted turnover intentions alongside with the other predictors (Groh, 2019). Therefore, I hypothesize that:

H5: Psychological safety mediates the relationship between AI leadership and turnover intentions.

Considering the previous information supporting the mediating effect of psychological safety in the relationship between leadership and turnover intentions, and the moderating effect of trust and fairness perceptions on both psychological safety and turnover intentions effect by leadership agents, I also hypothesize that:

H6: Trust and Fairness perceptions moderate the relationship between AI leadership and turnover intentions via psychological safety.

2.8 Conceptual model

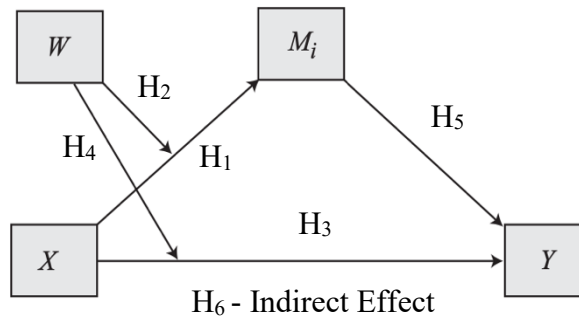


Figure 1. Conceptual model

3. Methodology

3.1 Research strategy and design

I aimed to test the effect of having an AI leader, versus a human leader, on employees' psychological safety and, consequent, turnover intentions and, additionally, how manipulations of trust and fairness perceptions of those leaders will influence these relationships. In order to do that, I designed an experimental study since it is the most common way to test for causality in hypothetical situations (Malhotra, Nunan, & Birks, 2017). This study consisted on an online study designed with Qualtrics, an online survey tool. This experiment consisted on four scenarios (leader: human vs. AI) x (perception: high in trust and fairness vs. control), to which participants were randomly assigned to, in order to increase this study validity (Malhotra et al., 2017). A between-subjects design was conducted in order to enable the comparison between participants with different scenarios conditions and avoiding transference of knowledge from one scenario to the other due to order effects.

In this study, I manipulated the independent variable, type of leader, in order to understand how that manipulation would affect the dependent variable turnover and the mediator, psychological safety. I also manipulated people's perception of trust and fairness regarding the adoption of new human leaders and AI leaders, by providing testimonials referring these feelings, to understand if those perceptions would affect the relationship between the independent and the dependent variable as well as the mediator, thus acting as a moderator.

3.2 Participants

This study was distributed in Prolific, an online recruitment platform for researchers. This platform was chosen to gather this study data because it was shown to provide reliable information in a fast and functional way and to find participants from a specific target demographics, and being a higher quality, and best response and honesty rates alternative when compared to MTurk, the most known online recruitment platform for researchers (Palan & Schitter, 2018; Peer, Brandimarte, Samat, & Acquisti, 2017). Participants were paid 4.76 per hour for participating in this study.

The recommended minimum sample size for an experimental study is 30 participants per cell (VanVoorhis & Morgan, 2007). In order to increase the likelihood of having significant results in this study I increased it, in order to follow the advised sample size indicated by G Power in the pilot study (See section 3.7) and in total I gathered 301 valid answers from a total of 425 participants (See section 4.1). Given that this study has four cells (leader: human vs. AI) x (perception: high in trust and fairness vs. control) this results in approximately 75 participants per cell. Considering the relevant sample of 301 participants, 57.5% were female, mean age of participants was 39.3 years ($SD = 11.23$) and most participants had as education level, a Bachelor's degree (43,5%). This study was conducted only with UK participants, in order to avoid cultural differences, who are employed in profit or non-profit organizations, in order to be easier for participants to imagine themselves in a working situation as the described one. For more demographic information see Appendix I.

3.3 Procedure

After reading and accepting the consent form, participants answered to basic demographic questions, in order to exclude immediately those who did not present consistent answers to their Prolific ID and consequently did not fit into this study target. Then, participants current job satisfaction was measured. This was done so I could control for the effect of this variable on the dependent and mediating measures, considering the direct and strong influence of job satisfaction on both turnover intentions and psychological safety according to the literature (Yanchus et al., 2015). Then, participants were randomly assigned to one of the four possible scenarios: human leadership, human leadership with manipulation of trust and fairness, AI leadership or AI leadership with manipulation of trust and fairness. After the scenario presentation, participants were asked to answer to two groups of questions regarding

psychological safety and turnover intentions, keeping in mind the previous scenario and imagining themselves in that situation under the leadership presented.

Finally, participants answered to a manipulation check regarding fairness, trust and leadership, questions regarding the ease of imagination of the situation and ease of comprehension of the questions and scenarios. Additionally, attention tests were included in order to identify careless answers within the text (Egelman & Peer, 2015) and within scales items questions (Meade & Craig, 2012) as well as asking if they did the study all at once or interrupted it. The study ended and a final acknowledgment and debriefing of the study's goals as well as the possibility for participants to leave any comments regarding the study or the topic. For detailed information, please see Appendix D.

3.4 Independent variable - Leadership Manipulation

Human vs. AI Leadership: In this experimental research design, I manipulated the independent variable by presenting two different leadership agents in four scenarios, describing the exact same working situation, in which the participant had to imagine a normal day in their current work but in which they are informed that they will have a new leader. The only difference between scenarios was that I changed the leader described in the two types of scenario having in one of them a new leader, implied that is a human leader (the control group), and in the other an AI leader (the experimental condition). Participants were presented with an explanatory image of the described hierarchy, in which there was the board as the top of the hierarchy, then the new human leader or AI leader and then the subordinates, with one of them highlighted in red, pointing out the participant role. By doing that, I expect that all differences resulting from the manipulation are due to the type of leadership. I described both types of leaders with the same information and describing the same leadership functions. However, as this is a very recent field, I added a short piece of information on AI leadership for those exposed to those scenarios.

3.5 Measurement variables

3.5.1 Dependent variable

Turnover Intentions: In order to measure participants turnover intentions within the described scenario, I used an adaptation of Michigan Organizational Assessment Questionnaire (Cummings, Fichman, Jenkins & Klesh, 1979) turnover intentions scale, also used by other researchers such as Kuvaas (2006) and Khatri, Fern and Budhwar (2001), with minor changes

(e.g. verb tenses to adapt to a hypothetical situation). This scale included five items (e.g. “I would probably look for a new job in the next year”; “I would often think about quitting my present job”) and was presented in a seven-point Likert-scale format ranging from 1 (*Completely disagree*) to 7 (*Completely agree*; *Cronbach* $\alpha = .945$). For more detailed information, see Appendix D and L.

3.5.2 Mediator variable

Psychological Safety: In order to measure participants psychological safety perception within the described scenario, I used a modification of Edmondson and Wooley’s (2003) psychological safety scale, which changes were, again, minor (e.g. verb tenses to adapt to a hypothetical situation). This six-item scale is an adaptation of Edmonson (1999) psychological safety scale, a manager-focused psychological safety studied from an individual level which is the most used psychological safety measure. This scale included five items (e.g. “If I make a mistake in this job, it is often held against me”; “If I had a problem in this company, I could depend on my manager to be my advocate”) and was presented in a seven-point Likert-scale format ranging from 1 (*Completely disagree*) to 7 (*Completely agree*; *Cronbach* $\alpha = .818$). For more detailed information, see Appendix D and L.

3.5.3 Moderator variable – Fairness and Trust Perceptions’ Manipulation

Trust and fairness testimonials: In order to assess how trust and fairness perceptions of leaders will influence the impact of having a new leader vs. an AI leader on psychological safety and, consequently, turnover intentions I manipulated the perception of trust and fairness of the leaders orthogonally. This manipulation consisted in presented two testimonials, previously tested (See section 3.6) of people who had previously gone through the exact same situation, that is, had their leader replaced by a new leader (human in the human condition case and AI in the AI condition case). I expect the testimonials conditions will increase perceptions of trust and fairness because it was showed that algorithmic adoption was enhanced by providing information regarding previous adoptions, improving employee’s engagement and performance and having a greater effect than by providing information regarding its precision (Alexander, Blinder, & Zak, 2018). For more information, please see Appendix D.

3.5.4 Covariables

Job Satisfaction: Job satisfaction is one of the main variables that influence turnover intentions and is correlated with psychological safety (Cotton & Tuttle, 1986; Edmondson & Lei, 2014). Thus, as expected job satisfaction was highly correlated with psychological safety ($r(299) = .206, p < .001$) and turnover intentions ($r(299) = -.274, p < .001$). Therefore, I included this variable as one of the covariables important to control for in this research. In order to measure participants current job satisfaction, I used a ten-item scale of Macdonald and MacIntyre (1997). This scale included ten items (e.g. “I receive recognition for a job well done”; “I feel good about my job”) and was presented in a seven-point Likert-scale format ranging from 1 (*Completely disagree*) to 7 (*Completely agree*; Cronbach $\alpha = .895$). For more detailed information see Appendix D and J.

Age: The literature of turnover intention has indicated that it is negatively and strongly correlated with age (Cotton & Tuttle, 1986; Martin, 1979). Therefore, I decided to include this variable as a covariable in this research. As expected, this study’s data has showed that the demographic variable age is correlated at the 0.05 level, although not strongly, with turnover intentions ($r(299) = -.115, p = .046$). For more detailed information see Appendix J.

Education: Education was positively associated with turnover intentions in the literature (Cotton & Tuttle, 1986; Martin, 1979). Therefore, I also decided to control for education in this study and, as expected, results showed that education is weakly but correlated with psychological safety at the 0.05 level ($r(299) = -.117, p = .042$). For more detailed information see Appendix J.

3.6 Pretest

I conducted a pre-test within this research. It was conducted for the application of trust and fairness manipulation. This pretest consisted on an online survey with $N=32$. Participants were recruited via Social Networks (53.1% female; Mean Age = 29.4 years ($SD=12.0$)). After a brief introduction concerning the structure and purpose of the study, guidelines to participants and important information regarding the consent form, participants were randomly assigned to one of the two groups of questions, with seven AI leaders or human leaders’ testimonials (between participants design). The two groups were exactly the same with the only difference being the type of leadership the testimonial referred to. After each testimonial, participants were asked to

rate their agreement with the sentences regarding their fairness and trust perceptions, believes in testimonials reality and probability of AI acceptance after testimonials being presented. These questions were presented in a seven-point Likert-scale format ranging from 1 (*Completely disagree*) to 7 (*Completely agree*).

To create those testimonials, I used elements of trust and fairness scales that are usually used to measure those variables. In particular I used trust elements of Mayer and Davis (1995) trust scale such as competence, skills and efficiency, benevolence and integrity. Fairness elements like playing no favorites, respect, answer to employees' problems and being praised for good work were based on Donovan, Drasgow, and Munson's (1998) fairness treatment scale.

In order to choose two of the testimonials to use in this research, firstly I focused on total average answers from the seven testimonials. Testimonial number 4 was the one presenting higher result on both AI and Human scenarios, therefore chosen to be presented in the final study. Moreover, testimonial 1 scored higher on human scenarios and testimonial two on AI scenarios. Between these two I choose testimonial number 1 since it presented higher means regarding the new leader's acceptance, a key variable in this study, in both AI and human scenarios when compared to testimonial 2. For more detailed information, please see Appendix A, B and C.

3.7 Pilot Study

This pilot study consisted in pre-testing the final study in order to evaluate scales reliability and calculate the final study sample size. Since this pilot study had the exact same structure and content of the final study, results trustworthiness was ensured. See section 3.1 and 3.3 for more detailed information regarding this pilot study design and structure. This pilot study had a sample size of 50, after excluding 38 invalid answers. Participants were recruited via Social Networks, namely LinkedIn (60.0% female; Mean Age = 32.0 years, SD = 11.3). I was able to test for scales reliability, namely, an alpha Cronbach of .637 for psychological safety, .881 for turnover intentions and .876 for job satisfaction, meaning all reliable scales according to Gliem and Gliem (2003). For more detailed information see Appendix D, E, F and G.

This pilot study was also used to calculate the required sample size of the final study. In order to accomplish that, I did an a priori test given this pretest alpha, power, and effect size, using G Power, a software used to calculate statistical power. Firstly, the effect size for psychological safety and turnover intentions was calculated. Psychological safety had an effect size Cohen's f of 0.14 and turnover intentions of 0.22. Regarding sample size calculation, the

results have showed that, for turnover intentions the recommended sample size to have significant results, with 95% confidence level, was of 96 participants, whereas for psychological safety the recommended size was of recommended 236 answers.

4. Results

4.1 Data preparation and cleaning

From a sample of 425 respondents, 124 were excluded. From these, 79 were excluded by failing attention tests, 44 for reporting consistent demographic information with their Prolific profile and one participant for not consenting in participating in this experiment. Leadership manipulation also worked as an attention test; however, no participant was excluded by failing to recognize the leadership presented in the scenario, also meaning that this manipulation was successfully implemented. No participant claimed that I could not trust their answers. Therefore, the total valid sample was composed by 301 participants. Additionally, reversed scored items were recoded and all scales which combined multiple items were aggregated by their means. An additional variable to represent the type of leadership and the presence or absence of justice and trust testimonials were created using the type of scenario presented. For more detailed information see Appendix H.

4.2 Scale reliability

All scales used in this experiment were tested and confirmed as reliable by the literature. Though, I still conducted a reliability analysis to test for scales' Cronbach alpha. The job satisfaction scale presented an alpha of .895 and the psychological safety scale an alpha of .818, both considered as a good coefficient (Gliem & Gliem, 2003). The turnover intention scale represented Cronbach alpha of .945 being considered as an excellent coefficient (Gliem & Gliem, 2003). For more detailed information see Appendix L.

4.3 Manipulation check

4.3.1 Trust and Fairness Manipulation – Testimonials

I did a Spearman correlation of trustworthiness and fairness perceptions of employees regarding the described leadership. The results showed a strong and statistically significant relation between these variables ($r = .79, p < .001$). Therefore, I combined the two into a new variable, the manipulation check variable, using the mean between the two. Additionally, to test for the manipulation effectiveness, I ran a one-way ANOVA, with testimonials (presence

of testimonials vs. control group) as the independent variable and the manipulation check variable as the dependent variable. As predicted, the difference means of perceptions between participants who had testimonials versus participants who did not, is statistically significant, $F(1, 299) = 24.142, p < .001$. Participants to whom testimonials were presented reported higher levels of trust and fairness perceptions of leaders ($M = 5.58; SD = 1.38$) when compared to the control group ($M = 4.71; SD = 1.68$), which means that the trust and fairness perception manipulation, through testimonials, was successfully achieved. For more detailed information see Appendix K.

4.4 Hypothesis testing

4.4.1 The effect of leadership and testimonials on psychological safety

Hypothesis 1 predicted that an AI leadership would negatively influence psychological safety and hypothesis 2 that testimonials of trust and fairness would moderate this relationship, such that when presented with these testimonials the leadership agent impact would smooth. In order to compare the main effects of leadership and testimonials, and their interaction, on psychological safety I ran a two-way ANOVA analysis. In this analysis I considered leadership agent (human and AI) and testimonials of trust and fairness (testimonials and control group) as independent variables and psychological safety as the dependent variable. Age, education and current job satisfaction were entered in the analysis as covariates (See section 3.5.4 for more details).³ Results showed a significant main effect of leadership agents on psychological safety by yielded an F ratio of $F(1, 294)_{\text{Leadership}} = 51.175, p < .001$, showing a significant effect between psychological safety results of participants in human scenarios ($M = 4.50, SD = 1.05$) when compared to AI scenarios ($M = 3.69, SD = 1.02$). Similarly, it also showed a significant main effect of testimonials on psychological safety, $F(1, 294)_{\text{Testimonials}} = 18.90, p < .001$, which indicates significant differences between those to whom testimonials of trust and fairness were presented ($M = 4.32, SD = 1.04$) and for the control group ($M = 3.84, SD = 1.13$). Finally, results have also showed a significant interaction effect of leadership agent and testimonials on psychological safety, $F(1, 294) = 4.08, p = .044$. Therefore, I conducted a post-hoc test using a simple effect analysis to break down this interaction effect. Results showed that the difference between human and AI leadership agent when having testimonials ($MD = 0.57, SD = 0.16$) is significant ($p < .001$) as well as for the control group ($MD = 1.02, SD = 0.16$). Also, considering

³ I covariates these variables out: Job satisfaction: $F(1, 294) = 26.54, p < .001$; Age: $F(1, 294) = 0.03, p = .867$; Education: $F(1, 294) = 3.69, p = .056$.

the AI scenario, there are significant mean differences ($p < .001$) between those with testimonials and without testimonials ($MD = 0.71, SD = 0.16$). However, when the leadership agent is human, the difference in means between having testimonials and the control group ($MD = 0.26, SD = 0.16$) is not significant ($p = .106$). For more detailed information see Appendix M.

4.4.2 The effect of leadership and testimonials on turnover intentions

Hypothesis 3 predicted that an AI leadership would positively influence turnover intentions and hypothesis 4 that testimonials of trust and fairness would moderate this relationship. Similarly, to the analysis on psychological safety, I also ran a two-way ANOVA analysis to understand these interactions, considering both leadership type (human and AI) and testimonials of trust and fairness (testimonials and control group) as independent variables and turnover intentions as the dependent variable and I used the same covariates as in 4.4.1.⁴ This analysis showed a significant main effect of leadership agent on turnover intentions, $F(1, 294)_{\text{Leadership}} = 45.48, p < .001$, indicating a significant difference between human leaders ($M = 3.61, SD = 1.43$) and AI leaders ($M = 4.66, SD = 1.49$). The main effect of testimonials returned a F ratio of $F(1, 294)_{\text{Testimonials}} = 16.13, p < .001$, indicating also a significant effect of testimonials on turnover intentions ($M = 3.86, SD = 1.45$) compared to the control group ($M = 4.44, SD = 1.60$). However, the interaction effect between type of leadership and testimonials was not significant, $F(1,294) = 2.48, p = .116$. For more detailed information see Appendix N.

4.4.3 Moderated mediation model

To test for moderation and mediation, I used model 8 of the PROCESS Macro of Hayes in SPSS with the purpose of studying if a moderated mediation model was supported. This regression analysis enables us to study how the leadership agent, human or AI, will influence turnover intentions through psychological safety and how the testimonials of trust and fairness moderate the effect. This analysis was done with 5% significance level (95% confidence interval) and 5.000 bootstrap samples.

The model 8 of PROCESS Macro of Hayes, was used considering turnover as the dependent variable (Y), type of leadership as the independent variable (X), psychological safety

⁴ I covariates these variables out: Job satisfaction: $F(1,294) = 37.67, p < .001$; Age: $F(1,294) = 3.97, p = .047$; Education: $F(1,294) = 1.54, p = .216$

as the mediator (M) and Testimonials as the moderator (W), see Figure 2. Similar to the previous analysis, covariates were current job satisfaction, age and education. For more detailed information, please see Appendix O.

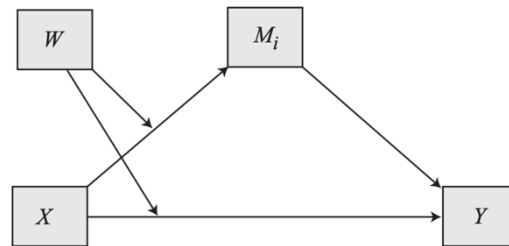


Figure 2. Conceptual Diagram - Model 8 PROCESS Hayes

Firstly, I conducted a moderation analysis considering psychological safety as the output within the moderated mediation analysis, which overall model was significant ($R_2 = .26$, $F(7,293) = 17.48$, $p < .001$). This analysis' results revealed that leadership agent is a significant predictor of psychological safety ($b = -0.40$, $t(299) = -7.15$, $p < .001$). Similarly, also testimonials are significant in predicting psychological safety ($b = 0.24$, $t(299) = 4.35$, $p < .001$). Moreover, there was a significant interaction of leadership agent and testimonials of trust and fairness on psychological safety ($b = 0.11$, $t(299) = 2.02$, $p = .044$).⁵ When considering the conditional effect of the type of leadership on psychological safety at values of testimonials I confirm that in the presence of testimonials of trust and fairness, the impact of leadership agents on psychological safety is moderated ($b = -0.29$, $t(299) = -3.59$, $p = .004$) when comparing to the control group ($b = -0.51$, $t(299) = -6.54$, $p < .001$). These results support hypothesis 1 that predicted that the leadership agent would influence psychological safety, more concretely, having an AI leadership would negatively influence employee's psychological safety. The same way, hypothesis 2, which predicted that testimonials of trust and fairness would moderate the relationship of leadership agent and psychological safety, was also supported.

Additionally, I analyzed the complete moderated mediation model, which was also showed to be significant ($R_2 = .54$, $F(7,293) = 49.53$, $p < .001$). The leadership agent significantly predicted turnover intentions ($b = 0.18$, $t(299) = 2.76$, $p = .006$), therefore validating hypothesis 3 which claimed that an AI leadership would affect turnover intentions, increasing it. However, regarding testimonials, these were revealed to be not significant in predicting turnover intentions ($b = -0.11$, $t(299) = -1.66$, $p = .098$). Similarly, the interaction

⁵ I covariates these variables out: Job satisfaction: ($b = 0.26$, $t(299) = 5.15$, $p < .001$); Age: ($b = -0.00$; $t(299) = -0.17$, $p = .867$); Education: ($b = -0.03$, $t(299) = -1.92$, $p = .056$)

term between leadership agent and testimonials of trust and fairness were showed to be non-significant in predicting turnover intentions ($b = -0.03$, $t(299) = -0.43$, $p = .671$).⁶ When looking to the conditional direct effects of leadership on turnover, I can see that the leadership agent is significant in predicting turnover intentions ($b = 0.21$, $t(299) = 2.27$, $p = .024$) but when testimonials are considered, the effect is not significant ($b = 0.16$, $t(299) = 1.75$, $p = .0808$). Therefore, hypothesis 4 which predicted a moderation effect of testimonials of trust and fairness in the direct relationship between leadership agent and turnover intentions, was not supported.

Psychological safety was also significantly predicted turnover intentions ($b = -0.85$, $t(299) = -13.25$, $p < .001$). The bootstrap confidence interval of the conditional indirect effect does not contain zero, which means that there is a significant indirect effect of leadership agent on turnover intentions by psychological safety, both in the presence of testimonials ($b = 0.24$, $SE = 0.07$, 95% CI [0.11, 0.39]) and in the control group ($b = 0.44$, $SE = 0.07$, 95% CI [0.30, 0.58]). These results confirm the existence of a mediation effect of leadership on turnover intentions via psychological safety, and consequently validate hypothesis 5 that predicted a mediation effect of leadership agent on turnover intentions, via psychological safety.

Moreover, results have showed a significant index of moderated mediation with psychological safety as the mediator ($b = -0.19$, $SE = 0.10$, 95% CI [-0.38, -0.004]), therefore providing evidence of testimonials of trust and fairness moderation on the relationship between leadership and turnover intentions, mediated by psychological safety, thus confirming hypothesis 6.

5. Discussion

5.1 Research findings and main conclusions

AI implementation in organizations has become a reality and its usage has spread across functions. It now plays a role in the decision-making process, which has motivated the study of AI leadership. Simultaneously, employees' turnover intentions have been studied in depth due to their importance for productivity and direct and indirect costs for organizations. Therefore, in this research, I aimed to understand how having an AI leader would affect subordinates' turnover intentions, by exploring the mediating effect of employee's psychological safety.

⁶ I covariates these variables out: Job satisfaction: ($b = -0.21$, $t(299) = -3.61$, $p < .001$); Age: ($b = -0.01$; $t(299) = -2.64$, $p = .0086$); Education: ($b = 0.00$, $t(299) = 0.08$, $p = .9355$)

Additionally, I aimed to understand if, and how, manipulation of trust and fairness would moderate these relationships.

This study's results have supported hypothesis 1, which predicted that adopting an AI leader within an organization would decrease subordinate's psychological safety. Similarly, hypothesis 2, which predicted that the previous relationship would be moderated by testimonials of trust and fairness was supported. Considering the direct effect of leadership agents on turnover intentions, hypothesis 3 predicted that having an AI leader would increase employees' turnover intentions, which was also supported. However, this relationship was not moderated by testimonials of trust and fairness (hypothesis 4). Regarding the complete moderation mediation model, it was shown that the relationship between leadership agents and employees' turnover intentions was mediated by a decrease in employees' psychological safety, therefore validating hypothesis 5. Finally, the complete moderation mediation model supported hypothesis 6, which predicted a moderation effect of trust and fairness perceptions of testimonials on the relationship between leadership and turnover intentions via psychological safety.

Since leadership is an organizational role that includes both mechanical and human tasks, it leads to a certain resistance of subordinates that believe AI agents lack, among other things, the intuition and emotional intelligence required in leadership positions, regardless of their actual performance. Therefore, in the presence of an AI leader, employees' psychological safety would decrease meaning that, they would feel less secure within the organization to freely express their ideas, give honest feedback and take risks, with fear of having their mistakes used against them, by anticipating being hard to ask for help and perceiving this leader as less supportive than a human leader. In such environment, employees tend to feel less motivated and satisfied with their work, increasing their prospects of leaving their jobs. This can explain the mediating effect of psychological safety in the relation between leadership agents and turnover intentions. However, this study has also shown a direct relationship between AI leadership and turnover intentions, which was not mediated by psychological safety. This might happen because multiple factors can influence employees' turnover intentions, other than their decrease in psychological safety. For instance, several researchers have recognized the role of emotional intelligence on turnover intentions (Brunetto, Teo, Shacklock, & Farr-Wharton, 2012; Jordan & Troth, 2010). Also, simply prejudice towards AI (Fraune, Sabanovic, 2014) or lack of familiarity (Kamide, Kawabe, Shigemi, & Arai, 2014) may play a role as well. Future research shall address what other factors explain the direct link between AI leadership and turnover intentions.

It is important to assess the possibility of, and how to counterattack this negative effect to fully enjoy AI opportunities. In this regard, the moderated mediated model in this study, has shown that despite the absence of effect of the presented testimonials directly on participants turnover intentions, there was a strong and significant effect of these testimonials on psychological safety and through this, also an indirect effect on employees' turnover intentions. In spite of the testimonials not having been enough to completely contradict the negative impact of AI on turnover intentions, they have smoothed the effect. A possible reason for the absence of direct impact of trust and fairness testimonials on turnover intentions is that others' opinions may be insufficient to overcome personal pre-towards these agents. However, the presence of testimonials effect on psychological safety and indirectly on turnover intentions, suggests that if companies intend to adopt an AI leadership, having others who previously experienced it sharing positive feedback regarding the system's ability to make trustworthy and fair decisions could decrease people's resistance to AI leaders. These results are in line with literature that suggest that algorithms adoption can be enhanced by sharing information regarding previous adoptions by other employees' in the same situation (Alexander et al., 2018). A possible reason for this is what is called the "confirmation bias" that indicates that our beliefs and pre-conceptions can lead perceptions, making us looking for evidences that confirm these pre-conceptions and making us perceived reality according (Nickerson, 1998). Given that humans naturally tend to avoid contact with AI in the workplace and face it with resistance and distrust (Li, Ju & Nass, 2015; Dietvorst et al., 2014) when in the presence of these agents, they might unconsciously look for evidence that supports this pre-concept regarding AI. By opposition, if testimonials regarding this agents' qualities and reinforce positive ideas regarding key aspect in its' acceptance, this will be the idea that employees will look for evidence to confirm them. Conformity might also play a role here (Asch, 1940). Often people conform to others opinions and behaviors, and that is specially the case in new and uncertain situations (Baddeley, 2013). As such, others opinions might play a particularly important role in modelling expectations and experiences such as this one.

5.2 Academic and managerial relevance

The present study offers findings relevant both to academic and managerial contexts. While leadership has been widely studied and from multiple perspectives, most studies considered managerial leadership as an exclusively human performed role. This study, on the contrary, studies the role of leadership performed by AI agents. AI leadership is a very recent

subject of study and, consequently, very little is known about its acceptance and organizational consequences. The present research suggests that in the presence of an AI leader, employees' psychological safety decreases. This adds to the existing literature on the relationship between leadership and employee's psychological safety. Furthermore, it shows that employees' turnover intentions increase under an AI leadership, which indicates a new antecedent for this variable, and, consequently, also for turnover behavior, demonstrating, in addition, the strong correlation between leadership agents and behaviors and turnover, in line with the literature (e.g. Azanza, Moriano, Molero, & Mangin, 2015; Kashyap & Rangnekar, 2016; Long & Thean, 2011; Wells & Peachey, 2011). By validating the mediation model of psychological safety in the relationship between AI leader and turnover intentions, this study also provides relevant evidence of psychological safety as an antecedent of turnover intentions which has been slightly neglected in the turnover literature. Despite being only a first step towards understanding the impact these leaders would have on organizations, this study contributes to the understanding of how AI leadership will likely model psychological safety and turnover intentions of employees. In doing so, it also opens future research possibilities in this field of study.

Moreover, this research suggests managerial implications for organizations that are considering or about to implement an AI leader. Despite the multiple advantages regarding the lack of personal interests, superior capacity of information and objectiveness and efficiency in decision-making, this study suggests companies should ponder wisely when considering the adoption of AI agents for leadership roles. In particular, organizations must be aware of the possible decrease in employees' psychological safety feelings, which, existing literature suggests to carry out negative consequences as, for example, the reduction of learning and voice behaviors and the deterioration of employee's job satisfaction (Detert & Burris, 2007; Edmondson, 1999; Edmondson & Lei, 2014). Another challenge that companies that adopt AI leaders might face, partially by decreasing employee's psychological safety, is the loss of talented employees by increasing turnover intentions, the main predictor of turnover behavior. Therefore, so that in the future, companies fully enjoy the advantages of this new type of leadership, understanding its consequences on employees' perceptions and well-being is essential, so that companies can counterattack and overcome these unfavorable outcomes. In this sense, this study also provides a suggestion as to how to overcome the initial resistance that humans have on AI leadership: by positively influencing their perceptions of these leader's fairness and trustworthiness, by, for example, providing them with positive testimonials of other people that have been in the same situation.

5.3 Limitations and future research

This research has certain limitations that should be considered and that pave the way for future research. Firstly, although an experimental study has multiple advantages especially in predicting results in hypothetical situations, these results lack the realism of a “real life” working situation. Despite these initial promising results, this experiment should be reconducted in a real working state where it replicates a closer reality to the general working force. Of course, the possible realism is, at the moment, rather limited, given AI leadership is not a reality yet, even if it seems likely to become part of it soon (Wesche & Sonderegger, 2019). Additionally, it is important to expand this research in order to understand if employees’ turnover intentions would actually turn into turnover behavior after employees interact with these AI agents or if after the interaction employees’ intentions would change, as well as understand which factors could influence this change.

Secondly, in order to avoid cultural differences unaccounted for, as that was not the goal was this study, I have used a sample restricted to UK participants, as most studies I was basing myself on were based on samples culturally similar to the UK culture. If on one hand this was a choice which was purposefully made not to add external variables, it raises the problem of generality of findings to other cultural realities. Therefore, it is important to study the effect of AI leadership on turnover intentions with other sample demographic characteristics, in particular, culture, in order to understand how these findings differ across countries and nations. Another limitation regarding this study sample is the fact that it was gathered through Prolific, an online recruitment platform for researchers, which can cause generality issues. Thus, futures research should use different samples. Likewise, in this study, I only control for current job satisfaction, age and education variables and there might be many other that influence this type of consequences of an AI leadership that future research could exploit.

Since AI leadership is a very recent field of study, very little is known regarding the effect of this new type of leadership on employees and organizational behavior variables, namely turnover. Future research can exploit different mediators, other than psychological safety, such as job satisfaction, commitment, and organizational identification, for example, in order to explain the relationship between AI leadership and turnover intentions. Moreover, this study is focused in how having an AI playing a leadership role within organizations would influence its subordinate’s psychological safety and consequent turnover intentions. Future research could focus in understanding the impact of having an AI agent playing other roles within organizations would have in these and other variables. For instance, how does having an

AI colleague influence employee's psychological safety and turnover intentions in the presence of an AI leader? What would be the impact of having an AI subordinate on human leadership?

Likewise, in this study, I have used the concepts of management and leadership interchangeably, however, future research should address the question of which management and leadership tasks, differentiated, are perceived as more human or AI functions. Consequently, it would be useful to understand which tasks represent different results, whether they are perceived as human or AI likely, and how these different tasks would affect employees' psychological safety, turnover intentions, and other work-related outcomes. As previously mentioned, humans and AI agents are working together and cooperating in order to enjoy the multiple AI and human advantages for organizations (Wilson & Daugherty, 2018). Therefore, if it is known which management and leadership functions should be performed by each of these agents, AI and human leaders could also join forces in a co-leadership, decreasing the negative impacts on employee's perceptions and consequent well-being and increasing organizational performance and success. Future research should study that possibility. Also, despite these new AI leaders promise to not suffer from human biases and self-interests, which are human leaders' weaknesses, leading to multiple problems of power abuse, fraud and unfair treatments, when deciding between an AI and a human leadership these situations seem to not play such a strong role and the resistance to AI seems to prevail. As it seems unlikely people do not value unbiased leadership, future studies could address the role that highlighting this issue would have on AI perception, for instance, by manipulating perception of the previous human leadership. The reminding of human power abuse situations might provide an efficient means to increase acceptability towards AI.

Finally, as briefly stated, this study revealed that even though testimonials of trust and fairness smooth the negative impact of having an AI leader, the effect prevails. One possible reason is that people perceive AI leadership as lacking of emotional capabilities required to deal with subjective and sensitive matters (Chamorro-Premuzic & Ahmetoglu, 2016; Möhlmann & Henfridsson, 2019; Wesche & Sonderegger, 2019). However, recent advances on AI are indicating that the next step will be to develop AI agents with emotional capabilities. It is argued that AI will be able to developed certain emotional skills by observing, interpreting, and mimicking human emotions and behaviors according to the contexts in which it happens, as well as physical characteristics as tone of voice, facial expressions and body language that will help AI to establish empathic relations with humans (Kosner, 2015).

Having emotional AI leaders might, therefore, be a way to suppress the AI aversion since emotional intelligence is considered as fundamental for leadership effectiveness, being

argued that good leaders require the ability to detect, interpret, and manage emotions of themselves and of subordinates in order to establish positive interactions and to adopt the best behavior according to each situation (Boal & Hooijberg, 2000; Wong & Law, 2002). In particular, employee's psychological safety is also influenced by leader's emotional intelligence (Zhou, Zhu, & Vredenburg, 2020), as well as turnover intentions by the mediating effects of multiple variables such as job satisfaction, engagement, commitment, and quality of leader member exchange (Brunetto, Teo, Shacklock, & Farr-Wharton, 2012; Jordan & Troth, 2010). In the same vein, emotional intelligence also plays a fundamental role in relationships trust, namely between humans and AI agents (Fab, Scheutz, Lohani, McCoy and Stokes, 2017; Mantas 2019). So, it is possible that in the presence of emotional AI leaders, the aversion to AI leaders, and its negative impact on psychological safety and turnover intentions would considerably decrease. Therefore, a possible follow-up study would be to exploit how trust and fairness perceptions as well as employees' psychological safety and turnover intentions are impacted by AI leaders with different levels of emotional intelligence. For possible suggestions of testimonials of emotional AI leadership for this follow up study, see Appendix P.

6. Conclusion

Regardless of this studies' conclusions, AI leadership is a very recent field of investigation and, consequently, very little is known about the impact of having AI leaders in workplace contexts. This study is only one of the first steps to better understand the consequences of having this type of organizational role performed by AI agents and how to overcome these consequences. I hope that, in doing so, it contributes to a better workplace for all.

7. Sources

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8. Appendix

Appendix A: Pre-test – Testimonials and questions

Testimonial 1:

“Two years ago, the company I work for, [adopted a new innovation policy | has undergone some changes]. One of these changes [was the implementation of artificial intelligence agents in leadership positions | was the change in some leadership positions professionals]. When these changes were communicated to us, there was a general feeling of discomfort and distrust. Despite sharing that feeling, I decided to wait and I was very surprised. The tasks were distributed more fairly, according to the availability of each member of the team and according to the strengths of each one of us and impartially. Despite being extremely demanding and aware of all our steps within the company, my leader is fair in the way [it | he] lets us be responsible for our own work and in the way [it | he] evaluates and rewards us. On the other hand, the fact that [it is an algorithm | he is highly qualified], [its adoption | his adoption] avoided certain risks, previously committed, is more efficient in the distribution of tasks and in their evaluation and also being less biased than the previous leadership. Whenever we have a question, the boss knows how to do it, having a rich and vast knowledge in multiple areas indispensable to our work. I feel that I can trust my boss's skills and impartiality.”

(Anne Taylor)

Testimonial 2:

“I have been a team management and effective leadership consultant for 9 years. [These intelligent robots are developed in order to have highly specialized knowledge in the areas in which they will be used and in complementary areas. | Business leaders are chosen if they have highly specialized knowledge in the areas in which they will be used and in complementary areas.] These leaders are not only highly qualified to carry out their duties, but are also impartial, objective and fair in their evaluations through logical and absolute evaluation criteria. The results of [the adoption of this artificial intelligence leader | hiring this new leader] show extremely high improvements on performance. They improve the effectiveness and efficiency of the position and the team between 85% and 95% and their acceptance by the members of the company is 93%. The feedback received shows that the subordinates of this new leader understand [it | him] as a more impartial, competent, cultured and fair leader in the treatment of employees.”

(John Carter)

Testimonial 3:

“I have a degree in Management and Business Administration and have been working in the strategy department of this company for 23 years. The decision to [adopt artificial intelligence agents | hire these new professionals] for leadership positions was very well thought out and we took into account not only the productivity of the departments, but also the well-being of our employees. We initially [adopted these technologies | hired these new professionals] for pilot departments in order to analyze their performance. We quickly realized its advantages at both monetary and non-monetary levels and implemented it throughout our value chain. The statistics regarding the productivity levels of the teams are highly significant and encouraging, with growth rates higher than the pre-implementation, higher rates of efficiency and effectiveness and lower costs derived from management errors. All of this, without prejudice to the well-being of our employees, who, in our half-yearly job satisfaction survey, were even more motivated and committed to their work. These refer to the efficiency and impartiality of [these artificial intelligent agents | these more qualified professional] as the main reasons for trust in the decisions of the leader and in the company itself, as well as fair treatment in the day-to-day and in the performance evaluation.”

(Sara Collins)

Testimonial 4:

“I have been an Operations Manager for this company for 5 years, having previously worked 10 years in another, in the same area. Despite my initial distrust about having [artificial intelligence agents as direct bosses | new direct bosses] in my company, I must confess that today I prefer [to have a robotic boss over a human boss | these new bosses]. In my first jobs, I often felt that my bosses, and bosses of other teams, proved to be unreliable and unfair in carrying out their duties. Problems such as self-interest, lack of technical knowledge, lack of legitimacy for the position, favoritism, unfair performance appraisal, bad mood or lack of empathy between subordinate and boss, which occur daily in teams with human bosses do not occur in the presence of [leaders of artificial intelligence | these new leaders].”

(Henry Smith)

Testimonial 5:

“Nowadays the relationship between the team leader and the team, as well as within the team members is much more positive. The fact that we have [a boss who is an artificial intelligence agent | a new boss], made the tasks more evenly and more efficiently distributed, taking into account what each one does best and without overloading those who work the most and making

life easier for less effort and our evaluation is more linked to our real performance and not to favoritism or chance. In addition to [being programmed with high qualifications | be highly qualified], [it | he] possess knowledge in all areas necessary to carry out its tasks, this [robot | new leader] cannot be influenced, deceived or manipulated nor has its own interests. And I was initially against this change ...”

(Mary Swan)

Testimonial 6:

“Although we have already [automated many tasks | had many changes in this company], when I was informed that [artificial intelligence | that these changes] would reach leadership tasks in the departments, I was not very confident about having [a “machine” to command me | a new boss leading me] and I even thought about saying goodbye. Who could guarantee me that this [“machine” | new boss] would be competent in the performance of its tasks and that it would be fair in the assessment it would make of my work and the way it would treat me? The truth is, yes [it | he]. This [robotic | new boss] turned out to be full of knowledge in the area and very objective and effective, and made our team more efficient by distributing tasks according to the knowledge and characteristics of each employee. With regard to the treatment and the chief-employee relationship, this is always done in an objective and impartial manner, based on facts for the new evaluation and the treatment that each one receives.”

(Julie Gilbert)

Testimonial 7:

“The truth is, I've never been a big fan of big changes. When we were told that we were going to have a [non-human boss | a new boss], I was extremely uncomfortable and even afraid of losing my job. Today, although I continue to prefer [interacting with humans than with machines | avoiding changes in the workplace], I think it was not as negative a change as I expected. This new boss is very qualified and objective, and since he cannot be influenced or have personal preferences, he all treats us impartially. In the day-to-day work I did not feel much difference after these changes. I still prefer the previous working methods, but the truth is that it is a matter of getting used to it.”

(Andrew Roberts)

Questions:

After reading the previous testimony, and taking it into consideration, please indicate how much you agree with the following statements:

This testimony increases my perception of fairness of new leaders.

- Strongly disagree
 Disagree
 Slightly disagree
 Neither agree nor disagree
 Slightly disagree
 Agree
 Strongly agree

This testimony increases my trust in new leaders.

- Strongly disagree
 Disagree
 Slightly disagree
 Neither agree nor disagree
 Slightly disagree
 Agree
 Strongly agree

This testimony seems very realistic to me.

- Strongly disagree
 Disagree
 Slightly disagree
 Neither agree nor disagree
 Slightly disagree
 Agree
 Strongly agree

If circumstances lead to a change of leadership in my company, I would more easily accept that situation after reading this testimonial.

- Strongly disagree
 Disagree
 Slightly disagree
 Neither agree nor disagree
 Slightly disagree
 Agree
 Strongly agree

Appendix B: Pre-test Demographic characteristics

Table 1

Sample Demographic Characteristics of Pre-test

		AI Scenario	Human Scenario	Total
Participants total #		18	14	32
Gender	Female	44.4%	64.3%	53.1%
	Male	55.6%	35.7%	46.9%
Age	20-30	66.6%	78.5%	71.9%
	40-50	22.3%	7.1%	15.6%
	50-60	11.1%	14.2%	12,5%
Nationality	Portuguese	100%	100%	100%
Employment status	Full time employee	66.7%	21.4%	46.9%
	Part time employee	-	7.1%	3.1%
	Self-employed	-	7.1%	3.1%
	Unemployed	-	7.1%	3.1%
	Student	33.3%	57.1%	43.8%
	Less than 9 th grade	-	14.3%	6.3%

Education level	9 th grade	5.6%	-	3.1%
	12 th grade	16.7%	7.1%	12.5%
	Professional degree	11.1%	-	6.3%
	Bachelor's degree	38.9%	50.0%	43.8%
	Master's degree	16.7%	28.6%	21.9%
	Postgraduate	5.6%	-	3.1%
	Other	5.6%	-	3.1%

Appendix C: Pre-test Results

Table 2

Mean and SD of Testimonials Results

			Test.1	Test.2	Test.3	Test.4	Test.5	Test.6	Test.7
Justice	AI	<i>M</i>	5.39	5.28	5.22	5.44	5.50	5.39	5.39
		<i>SD</i>	1.378	1.179	1.263	1.097	1.150	1.037	1.290
	Human	<i>M</i>	5.79	5.79	5.79	5.79	5.79	5.36	5.43
		<i>SD</i>	1.369	1.122	1.051	1.528	1.311	1.393	0.938
Trust	AI	<i>M</i>	5.06	5.22	5.00	5.33	5.06	5.00	4.89
		<i>SD</i>	1.305	1.263	1.237	1.188	1.259	1.188	1.278
	Human	<i>M</i>	5.79	5.86	5.79	5.79	5.64	5.14	5.29
		<i>SD</i>	1.122	1.027	1.122	1.311	1.082	1.167	1.204
Realistic	AI	<i>M</i>	5.33	5.61	5.06	5.50	5.22	5.33	5.56
		<i>SD</i>	1.237	1.195	1.434	1.339	1.166	1.328	1.199
	Human	<i>M</i>	5.79	5.50	5.57	5.79	5.43	5.43	6.07
		<i>SD</i>	1.528	1.019	0.938	1.122	1.342	1.284	1.207
Acceptance	AI	<i>M</i>	5.28	5.17	4.78	5.28	4.89	4.89	4.94
		<i>SD</i>	1.447	1.383	1.555	1.447	1.367	1.491	1.474
	Human	<i>M</i>	5.50	5.29	5.50	5.79	5.57	5.21	4.93
		<i>SD</i>	1.286	1.267	1.160	1.122	1.222	1.188	1.639
Total (Mean)	AI	<i>M</i>	5.26	5.32	5.01	5.39	5.17	5.15	5.19
		<i>SD</i>	1.214	1.169	1.178	1.176	1.101	1.148	1.187
	Human	<i>M</i>	5.71	5.61	5.66	5.79	5.61	5.29	5.43
		<i>SD</i>	1.156	0.964	0.853	1.172	1.117	1.100	1.094

Note: Testimonials 1 and 4 were chosen.

Appendix D: Survey (Pilot study and final study)

Welcome and thank you for participating in this experience. This study consists in reading 7 testimonials regarding leadership change in the workplace and answer to multiple questions regarding it. In total, this study takes around 7 minutes to be completed. Please answer as honestly as possible. All answers are anonymous and confidential, which means that we are unable to link your responses to your identity. The collected data will only be used for research. Your participation will contribute to research within the scope of a master's thesis. Please reply at once, without stops or distractions and please watch out for all the questions you are asked. If you have any questions regarding this study, please contact me: Patricia Moreira (152118153@alunos.lisboa.ucp.pt). Thank you very much.

Do you consent participating in this study? (*Only for the final survey*)

I consent, begin the study

I do not consent

(*Only for the final survey*)

As you do not wish to participate in this study, please return your submission on Prolific by selecting the “Stop without completing” button.

Skip to: End of Survey

(*Only for the final survey*)

Before you start, please switch off phone/e-mail/music so you can focus on this study. Thank you.

Please enter your Prolific ID:

(*Only for the final survey, in pre-test 2, it appears in the end*)

Age:

Gender:

Female

Male

Other

Nationality:

UK

Other (Specify, please)

Education level:

- Primary education
 Secondary education
 Further education
 High education
 Bachelor's degree
 Master's degree
 Doctoral degree
 Other (Please Specify)

Employment status:

- Self-employed
 Unemployed
 Student
 Worker & Student
 Retired
 Employee in profit or non-profit organizations
 Other (Specify, please)

(Only for the final survey)

You are ineligible for this study, as you have provided information which is inconsistent with your Prolific prescreening responses. Please return your submission on Prolific by selecting the "Stop without completing" button.

Skip to: End of Survey

Having into consideration your current job, please indicate how much do you agree with the following sentences:

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
I receive recognition for a job well done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel close to the people at work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel good about working at this company.

I feel secure about my job.

I believe management is concerned about me.

On the whole, I believe work is good for my physical health.

My wages are good.

All my talents and skills are used at work.

I get along with my supervisors.

I feel good about my job.

Note: In italic is the information presented only for AI scenarios.

Please imagine the following situation:

You are on a normal working day at the company where you currently working, and you receive a notification, together with the rest of your team/company, about a meeting to be held

after lunch. The theme of this meeting is the change of the head of your department/company since your current boss received a proposal from another company that decided to accept.

You are informed that the company has decided to adopt a stronger technological innovation policy, betting and investing in the adoption of Artificial Intelligence. One of the measures taken under this new innovation policy was the introduction of an artificial intelligence agent for management tasks.

Artificial intelligence (AI) refers to the simulation of human intelligence on machines that are programmed to think and behave like humans. This term can also be applied to any machine that demonstrates traits associated with the human mind such as, learning and problem solving. In other words, an Artificial Intelligence system is a computer program that has the ability to think and learn intelligently, just like humans. Usually these agents are known as computers or intelligent robots. More specifically, an artificial intelligence manager is a robot that is constantly learning, adapting and developing, just like a human being once it has intelligence. This intelligent robot is programmed to be able to guide, evaluate, structure and divide work, make tasks easier, provide feedback and improve interactions within a group or company.

Therefore, this meeting serves the purpose of introducing your new boss, who acts as the new leader of the team. This will occupy the same functions as the previous one, which are, in general, planning, organisation, leadership and control tasks. More specifically, this new boss will be responsible for, among other things, decision making, goal development, resource allocation, task allocation, communication management among team members, giving feedback, motivating, evaluating performance, providing support for activities, hire and reward employees. Any issues related to decision making, doubts, requests for help, discussions about issues, feedback, or presentation of ideas are dealt with.

[Some companies have already adopted systems of Artificial Intelligence Leadership and the feedback given by two employees of these companies are as follows: / These new hired leaders have previously performed their duties at other companies, the feedback testimonials given by two employees of these companies are as follows:]

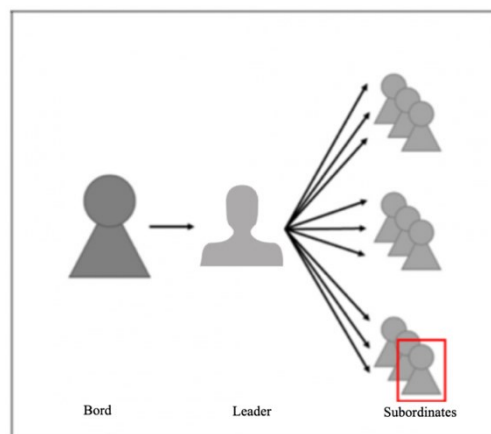
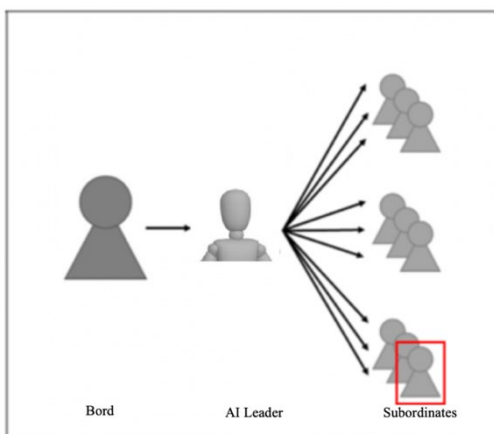
“Two years ago, the company I work for, [adopted a new innovation policy | has undergone some changes]. One of these changes [was the implementation of artificial intelligence agents in leadership positions | was the change in some leadership positions professionals]. When these changes were communicated to us, there was a general feeling of discomfort and distrust. Despite sharing that feeling, I decided to wait and I was very surprised. The tasks were distributed more fairly, according to the availability of each member of the team and according to the strengths of each one of us and impartially. Despite being extremely demanding and aware of all our steps within the company, my leader is fair in the way [it | he] lets us be responsible for our own work and in the way [it | he] evaluates and rewards us. On the other hand, the fact that [it is an algorithm | he is highly qualified], [its adoption | his adoption] avoided certain risks, previously committed, is more efficient in the distribution of tasks and in their evaluation and also being less biased than the previous leadership. Whenever we have a question, the boss knows how to do it, having a rich and vast knowledge in multiple areas indispensable to our work. I feel that I can trust my boss's skills and impartiality.”

(Anne Taylor)

“I have been an Operations Manager for this company for 5 years, having previously worked 10 years in another, in the same area. Despite my initial distrust about having [artificial intelligence agents as direct bosses | new direct bosses] in my company, I must confess that today I prefer [to have a robotic boss over a human boss | these new bosses]. In my first jobs, I often felt that my bosses, and bosses of other teams, proved to be unreliable and unfair in carrying out their duties. Problems such as self-interest, lack of technical knowledge, lack of legitimacy for the position, favoritism, unfair performance appraisal, bad mood or lack of empathy between subordinate and boss, which occur daily in teams with human bosses do not occur in the presence of [leaders of artificial intelligence | these new leaders].”

(Henry Smith)

The image below exemplifies your relationship with your leader, to whom you respond directly:



This study requires you to give us your opinion on the issues raised in the situation presented. It is important that you read all directions and questions carefully before answering. Previous research has shown that some people do not spend time carefully reading everything presented in the questionnaire. The next question is to test whether you are doing it. So, if you are reading this, please answer Strongly disagree to the next question. Thank you for participating in this study and dedicating the necessary time and attention to it.

I prefer to work in a company where I feel comfortable and valued, even if the salary is lower.

- Strongly disagree
- Disagree
- Slightly disagree
- Neither agree nor disagree
- Slightly disagree
- Agree
- Strongly agree

Considering that you are facing the scenario described above, in the situation of the subordinate in red in the previous image, please indicate how much you agree with the following questions, imagining that this situation is happening to you and that you work under the leadership presented:

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
If I made a mistake in this job, it would be often held against me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would be difficult to ask other in this department/ company for help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

My manager would often encourage me to take on new tasks or to learn how to do things I have never done before.

If I was thinking about leaving this company to pursue a better job elsewhere, I would talk to my manager about it.

If I had a problem in this company, I could depend on my manager to be my advocate.

Often when I would raise a problem, my boss would not seem very interested in helping me find a solution.

Considering that you are facing the scenario described above, in the situation of the subordinate in red in the previous image, please indicate how much you agree with the following questions, imagining that this situation is happening to you and that you work under the leadership presented:

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
I would probably look for a new job in the next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I might quit my present job next year.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If you are paying attention to the questions, please answer, slightly agree to this question.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would likely actively look for a new job within the next three years.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would often think about quitting my present job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would not see
much prospects
for the future in
this organization.

How fair do you imagine this leadership is?

- Totally unfair Unfair Slightly unfair No opinion Slightly fair Fair Totally unfair

How much do you feel you can trust this leadership?

- Absolutely nothing Very little Little No opinion Fairly A lot Totally

Which of these agents took the leadership role in the previous described situation?

- Human leader AI leader Other (If you wish, write in the space below)

How easy it was for you to imagine the previously described situation?

- Extremely hard Very hard Hard Neither easy nor difficult Easy Very easy Extremely easy

How easy it was for you to understand the questions of this study?

- Extremely hard Very hard Hard Neither easy nor difficult Easy Very easy Extremely easy

Do you think you have paid enough attention or do you think it is better not to use the data from your answers?

- I took enough attention. It is safe to use the data from my answers.
- I confess that I didn't pay much attention. It is better not to use the data from my answers.

Did you complete this study at once, without being interrupted?

- Yes
- No (Explain the nature of the interruption, please)

Thank you for your collaboration. If you have any questions, do not hesitate in contact me, Patricia Moreira, by 152118153@alunos.lisboa.ucp.pt

If you have any comments, write them below:

Appendix E: Pilot Study Overview

Table 3

Pilot Study Sample Size

	Valid		Invalid		Total	
	N	%	N	%	N	%
Answers	50	56.8%	38	43.2%	88	100%

Table 4

Pilot Study Scenarios Frequency

	AI		Human		Total	
	N	%	N	%	N	%
With testimonials	13	26%	7	14%	20	40%
Control group	17	34%	13	26%	30	50%
Total	30	60%	20	40%	50	100%

Appendix F: Pilot Study Demographic Characteristics

Table 5

Sample demographic characteristics of Pilot Study

		AI	Human	AI with Testim.	Human with Testim.	Total
Participants total #		17	13	13	7	50
Gender	Female	52.9%	69.2%	69.2%	42.9%	60%
	Male	47.1%	30.8%	30.8%	57.1%	40%
Age	20-39	76.5%	69.2%	76.9%	71.4%	74%
	40-59	23.5%	23.1%	23.1%	14.3%	22%
	60-79	-	7.7%	-	14.3%	4%
Nationality	Portuguese	100%	100%	100%	100%	100%
Employment status	Full time employee	82.3%	84.6%	92.3%	71.5%	84%
	Part time employee	5.9%	-	-	-	2%
	Student	-	-	-	14.2%	2%
	Student & Worker	11.8%	15.4%	7.7%	14.3%	12%
Education level	Less than 9 th grade	-	-	-	-	-
	9 th grade	5.9%	-	-	14.3%	4%
	12 th grade	-	-	15.4%	14.3%	6%
	Professional degree	-	7.6%	7.6%	28.5%	8%
	Bachelor's degree	52.9%	53.8%	38.5%	28.6%	46%
	Master's degree	29.4%	30.8%	30.8%	14.3%	28%
	Postgraduate	11.8%	7.7%	7.7%	-	8%
Other	-	-	-	-	-	

Appendix G: Pilot Study Reliability Analysis

Table 6

Job satisfaction Cronbach's Alpha

Construct	# items	Cronbach's Alpha	Items	If Item Deleted
Job satisfaction	10	$\alpha = .876$	I receive recognition for a job well done.	$\alpha = .850$
			I feel close to the people at work.	$\alpha = .875$
			I feel good about working at this company.	$\alpha = .863$
			I feel secure about my job.	$\alpha = .868$
			I believe management is concerned about me.	$\alpha = .849$
			On the whole, I believe work is good for my physical health.	$\alpha = .882$
			My wages are good.	$\alpha = .875$
			All my talents and skills are used at work.	$\alpha = .862$
			I get along with my supervisors.	$\alpha = .859$
			I feel good about my job.	$\alpha = .851$

Table 7

Psychological Safety Cronbach's Alpha

Construct	# items	Cronbach's Alpha	Items	If Item Deleted
Psychological Safety	6	$\alpha = .637$	If I made a mistake in this job, it would be often held against me.	$\alpha = .623$
			It would be difficult to ask others in this department/company for help.	$\alpha = .557$

	My manager would often encourage me to take on new tasks or to learn how to do things I have never done before.	$\alpha = .631$
	If I was thinking about leaving this company to pursue a better job elsewhere, I would talk to my manager about it.	$\alpha = .590$
	If I had a problem in this company, I could depend on my manager to be my advocate.	$\alpha = .574$
	Often when I would raise a problem, my boss would not seem very interested in helping me find a solution.	$\alpha = .579$

Table 8
Turnover Intentions Cronbach's Alpha

Construct	# items	Cronbach's Alpha	Items	If Item Deleted
Turnover Intentions	5	$\alpha = .881$	I would probably look for a new job in the next year.	$\alpha = .862$
			I might quit my present job next year.	$\alpha = .845$
			I would likely actively look for a new job within the next three years.	$\alpha = .858$
			I would often think about quitting my present job.	$\alpha = .859$
			I would not see much prospects for the future in this organization.	$\alpha = .856$

Appendix H: Study Overview

Table 9

Study Sample Size

	Valid		Invalid		Total	
	N	%	N	%	N	%
Answers	301	70.8%	124	29.2 %	425	100%

Table 10

Scenarios frequency

	AI		Human		Total	
	N	%	N	%	N	%
With testimonials	75	24.9%	73	24.3%	153	50.8%
Control group	81	26.9%	72	23.9%	148	49.2%
Total	156	51.8%	145	48.2%	301	100%

Appendix I: Study Demographic Characteristics

Table 11

Sample demographic characteristics

		AI	Human	AI with Testim.	Human with Testim.	Total
Participants total #		81	72	75	73	301
Gender	Female	54.3%	54.2%	53.3%	68.5%	57.5%
	Male	45.7%	45.8%	46.7%	31.5%	42.5%
Age	20-39	56.8%	54.2%	65.3%	58.9%	58.8%
	40-59	33.3%	41.6%	30.7%	32.9%	34.6%
	60-79	9.9%	4.2%	4.0%	8.2%	6.6%
Nationality	UK	100%	100%	100%	100%	100%
Employment status	Employee in a profit or non-profit organization	100%	100%	100%	100%	100%
	Secondary education	14.8%	12.5%	12.0%	21.9%	15.3%
	Further education	11.1%	16.7%	12.0%	13.7%	13.3%

Education level	High education	8.6%	6.9%	10.7%	11.0%	9.3%
	Bachelor's degree	44.4%	36.1%	52.0%	41.1%	43.5%
	Master's degree	17.3%	19.4%	9.3%	9.6%	14.0%
	Doctoral degree	3.7%	6.9%	4.0%	2.7%	4.3%
	Other	-	1.4%	-	-	0.3%

Appendix J: Covariables

Table 12

Correlations of demographic variables and job satisfaction with Turnover Intentions and Psychological Safety

		Age	Gender	Education	Job Satisfaction
Turnover Intentions	<i>r</i>	-.115*	-.023	.110	-.274**
	Sig.	.046	.687	.057	.000
Psychological Safety	<i>r</i>	-.013	-.016	-.117*	.206**
	Sig.	.816	.789	.042	.000

Note. *** $p < .001$, ** $p < .01$, * $p < .05$

Appendix K: Manipulation Check

Table 13

Correlations of trust and fairness

		How much do you feel you can trust this leadership?
How fair do you imagine this leadership is?	<i>r</i>	-.773**
	Sig.	.000

Note. *** $p < .001$, ** $p < .01$, * $p < .05$

Table 14

Manipulation check – Mean and Standard Deviation

Manipulation_Check_Variable	N	Mean	Std. Deviation
Control Group	153	4.71	1.681
With testimonials	148	5.58	1.378
Total	301	5.14	1.598

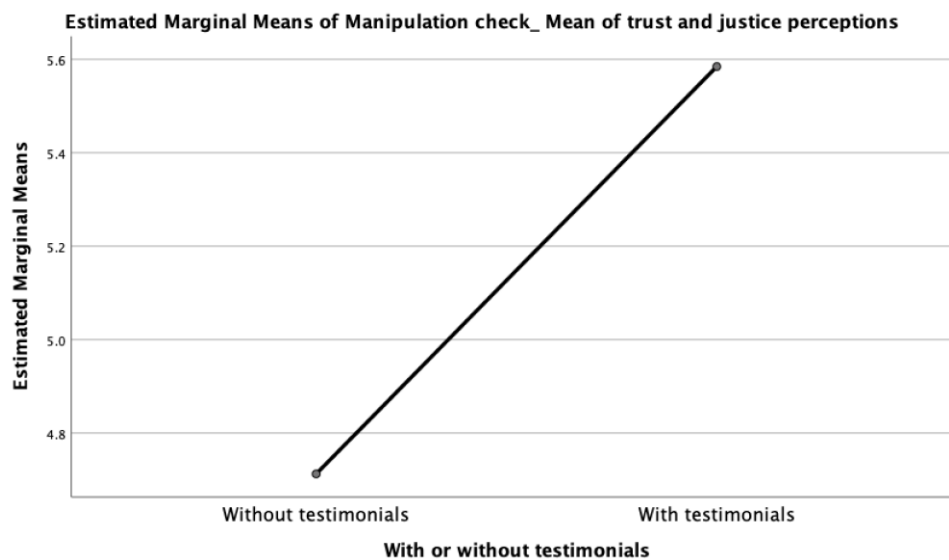
Note: The manipulation_check_variable is the mean answers between trust and fairness manipulation questions.

Table 15

Manipulation check – ANOVA analysis

Source	Type III Sum of Squares	df	Mean Squared	F	Sig.
Corrected Model	57.209 ^a	1	57.209	24.142	.000
Intercept	7976.232	1	7976.232	3365.923	.000
Testimonials	57.209	1	57.209	24.142	.000
Error	708.541	299	2.370		
Total	8721.750	301			
Corrected Model	765.749	300			

Image 1. Manipulation_check_variable and testimonials – ANOVA



Appendix L: Study Reliability Analysis

Table 16

Job satisfaction Cronbach's Alpha

Construct	# items	Cronbach's Alpha	Items	If Item Deleted
Job satisfaction	10	$\alpha = .895$	I receive recognition for a job well done.	$\alpha = .880$
			I feel close to the people at work.	$\alpha = .883$

	I feel good about working at this company.	$\alpha = .871$
	I feel secure about my job.	$\alpha = .888$
	I believe management is concerned about me.	$\alpha = .892$
	On the whole, I believe work is good for my physical health.	$\alpha = .889$
	My wages are good.	$\alpha = .892$
	All my talents and skills are used at work.	$\alpha = .885$
	I get along with my supervisors.	$\alpha = .888$
	I feel good about my job.	$\alpha = .871$

Table 17

Psychological Safety Cronbach's Alpha

Construct	# items	Cronbach's Alpha	Items	If Item Deleted
Psychological Safety	6	$\alpha = .818$	If I made a mistake in this job, it would be often held against me.	$\alpha = .790$
			It would be difficult to ask others in this department/company for help.	$\alpha = .784$
			My manager would often encourage me to take on new tasks or to learn how to do things I have never done before.	$\alpha = .827$
			If I was thinking about leaving this company to pursue a better job elsewhere, I would talk to my manager about it.	$\alpha = .789$
			If I had a problem in this company, I could depend on my manager to be my advocate.	$\alpha = .752$

Often when I would raise a problem, my boss would not seem very interested in helping me find a solution. $\alpha = .786$

Table 18

Turnover Intentions Cronbach's Alpha

Construct	# items	Cronbach's Alpha	Items	If Item Deleted
Turnover Intentions	5	$\alpha = .945$	I would probably look for a new job in the next year.	$\alpha = .929$
			I might quit my present job next year.	$\alpha = .925$
			I would likely actively look for a new job within the next three years.	$\alpha = .938$
			I would often think about quitting my present job.	$\alpha = .933$
			I would not see much prospects for the future in this organization.	$\alpha = .937$

Appendix M: The effect of leadership agent and testimonials on Psychological Safety

Table 19

ANOVA – Psychological Safety

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	97.133 ^a	6	16.189	17.484	.000
Intercept	65.785	1	65.785	71.047	.000
Job satisfaction	24.572	1	24.572	26.538	.000
Age	0.026	1	0.026	0.028	.867
Education	3.421	1	3.421	3.694	.056
Leadership	47.384	1	47.384	51.175	.000
Testimonials	17.499	1	17.499	18.899	.000

Leadership *	3.779	1	3.779	4.082	.044
Testimonials					
Error	272.223	294	0.926		
Total	5372.472	301			
Corrected Total	369.356	300			

Table 20

Psychological Safety ANOVA – Post Hoc Analysis

		MD	SE	<i>p</i>	95% CI	
Testimonials	Human – AI	1.021*	0.156	.000	0.714	1.328
Control Group	Human - AI	0.571*	0.159	.000	0.258	0.883
AI	Testimonials – Control Group	0.711*	0.155	.000	0.406	1.016
Human	Testimonials – Control Group	0.260	0.160	.106	-0.055	0.576

Note. *** $p < .001$, ** $p < .01$, * $p < .05$

Appendix N: The effect of leadership agent and testimonials on Turnover Intentions

Table 21

ANOVA – Turnover Intentions

Source	Type III Sum of Squares	df	Mean Square	<i>F</i>	Sig.
Corrected Model	192.899 ^a	6	32.150	17.899	.000
Intercept	284.996	1	284.996	158.672	.000
Job satisfaction	67.655	1	67.655	37.667	.000
Age	7.127	1	7.127	3.968	.047
Education	2.766	1	2.766	1.540	.216
Leadership	81.693	1	81.693	45.483	.000
Testimonials	28.978	1	28.978	16.133	.000
Leadership *					
Testimonials	4.461	1	4.461	2.483	.116
Error	528.064	294	1.796		
Total	5918.640	301			
Corrected Total	720.963	300			

Appendix O: Moderated Mediation Analysis – PROCESS Model 8

Table 22

Model Summary

	R	R-sq	MSE	F	df1	df2	p
Psychological Safety	.5128	.2630	0.9259	17.4839	6	294	.0000
Turnover Intentions	.7362	.5420	1.1270	49.5307	7	293	.0000

Table 23

Direct, interaction and conditional effects on Psychological Safety

	b	SE	t	95% CI	
Leadership on Psychological Safety	-0.3979	0.0556	-7.1537**	-0.5073	-0.2884
Testimonials on Psychological safety	0.2428	0.0559	4.3473**	0.1329	0.3527
Interaction effect of Leadership and Testimonials on Psychological Safety	0.1126	0.0557	2.0203*	0.0029	0.2222
Job satisfaction	0.2638	0.0512	5.1515**	0.1630	0.3646
Age	-0.0009	0.0051	-0.1681	-0.0109	0.0092
Education	-0.0299	-0.0156	-1.9221	-0.0606	0.0007
Conditional effects of Leadership on Psychological Safety for the control group	-0.5104	0.0780	-6.5419**	-0.6640	-0.3569
Conditional effects of Leadership on Psychological Safety with Testimonials	-0.2853	0.0794	-3.5918**	-0.4416	-0.1290

Note. *** p < .001, ** p < .01, * p < .05

Table 24

Direct, interaction and conditional effects on Turnover Intentions

	<i>b</i>	SE	<i>t</i>	95% CI	
Leadership on Turnover Intentions	0.1832	0.0665	2.7558**	-0.0524	-0.3141
Testimonials on Turnover Intentions	-0.1055	0.0636	-1.6589	-0.2306	0.0197
Interaction effect of Leadership and Testimonials on Turnover Intentions	-0.0263	0.0619	-0.4253	-0.1482	0.0955
Psychological Safety on Turnover Intentions	-0.8525	0.0643	-13.2497**	-0.9792	-0.7259
Job satisfaction	-0.2129	0.0590	-3.6079*	-0.3290	-0.0967
Age	-0.0149	0.0056	-2.6445*	-0.0260	-0.0038
Education	0.0014	0.0173	0.0810	-0.0326	0.0354
Conditional effects of Leadership on Turnover Intentions for the control group	0.2095	0.0921	2.2743	0.0282*	0.3909
Conditional effects of Leadership on Turnover Intentions for Testimonials	0.1569	0.0895	1.7524	-0.0193	-0.0035

Note. *** $p < .001$, ** $p < .01$, * $p < .05$

Table 25

Indirect effects

	Effect	BootSE	BootLLCI	BootULCI
Indirect effect of Leadership on Turnover Intentions via Psychological Safety for the control group	0.4352	0.0709	0.3028	0.5795
Indirect effect of Leadership on Turnover Intentions via Psychological Safety with Testimonials	0.2432	0.0719	0.1058	0.3870

Table 26

Indirect effect: Leadership - Psychological Safety – Turnover Intentions

	Effect	BootSE	BootLLCI	BootULCI
Control Group	0.4352	0.0709	0.3028	0.5795
With testimonials	0.2432	0.0719	0.1058	0.3870

Table 27

Index of moderated mediation

	Index	BootSE	BootLLCI	BootULCI
Testimonials	-0.1920	0.0958	-0.3849	-0.0035

Appendix P: Suggestions of Emotional AI Leadership Testimonials**Testimonial 1:**

Our previous superior was so unfocused on the team that we felt alone to deal with all problems. He never helped us solve any situation and was only concerned with having the final work done within the timeline. Probably that is the reason why I didn't feel worried about having [an AI leader | a new leader]. I was already used to have a cold boss, so this change would hardly be any worse. I couldn't have been more surprised. [The AI leader | The new

leader] possesses higher emotional intelligence than the [previous human leader | previous one]. [It | He] is really focused in providing a good work-environment and knows how to manage our emotions in order to achieve that. I remember that, a few months ago, when there was a change in our departments' tasks and activities, I had a colleague that was struggling with the new tasks. She was really nervous because our new leader was so efficient and aware of everything in this company that she feared to be harmed in her performance evaluation, or even worse. Our leader noticed that she was very stressed and with difficulties in performing the next tasks, but instead of blaming her, [it | he] helped her by talking to her and guiding her in developing the knowledge and skills necessary to perform better in a way that reduced her anxiety. [It | he] was able to recognize her problem and help her manage her emotions and improve herself.

Testimonial 2:

My previous boss was so impersonal. During the four years in this company, he never looked straight at us, had a normal conversation or asked how we felt. He always looked so distant from our team that we never perceived him as a member, but rather an external supervisor of our work. The current [AI leader | leader] possesses much higher emotional intelligence. I mean, [it | he] has skills that allow it to create empathy with us and be able to understand and react to our emotions, as well as converse with us regarding non-work subjects. [It | he] even makes some jokes sometimes! It is like having a super professional, competent and warm [non-human | new] member within our team. I remember that when my [AI leader | new leader] was integrated in our company I was going through a difficult phase in my personal life with my son. My previous supervisor, never noticed that I wasn't right. But a few weeks after [the implementation of artificial intelligence leadership | his hiring], my new leader noticed it. And it acted on it! We had a meeting in which [it | he] said it noticed my emotional status was different and asked if I wanted to talk about it. Once I explained the problem, [it | he] figured out a way for me to leave earlier to deal with my son's problems and to compensate by working from home during that time. It was really helpful!

Testimonial 3:

When I was told that [artificial intelligent agents with emotional skills would be adopted as department supervisors in my company | a new leader would be hired as the department supervisor in my company], I was really dissatisfied with that decision. That organizational role requires not only strong objective competencies as also some emotional skills to deal with more

subjective matters, [which a machine would not possess | which take time to develop in new jobs and teams], or so I thought. But I was wrong and what people were saying about [it | him] was right: [it | he] does possess high emotional intelligence! [It | He] is able to recognize when we are nervous, happy, or tired, and can react to our emotional status as [it | he] possesses emotional characteristics that enable our team members to establish an empathic relation with it and also to improve relationships between team members. In our last project, with all the pressure to be successful in what was an extremely important work, the team started having constant quarrels and our effectiveness decreased considerably. Our [AI leader | new leader] was able to recognize this problem and solved our interpersonal misunderstandings through active listening and communication training and team building activities. [It | He] managed our emotions well and the team's well-being (as well as performance) increased considerably.

Testimonial 4:

I liked the idea of having [an AI leader | this new leader] from the first moment. [Its | His] objectivity, high performance capabilities, and knowledge, as well as [its | his] lack of personal desires always seemed a huge advantage not only for our company as for us employees as well. But I was afraid that the emotional part of a leader's role was not fully well-performed. In my point of view, a leader does not only have to deal with performance related matters but should also promote subordinate's well-being within their jobs, motivate them, and establish frequent and honest communication within the team, and I was unsure if [a robot could do that | he could do it, especially in the short-run]. However, my fears were pointless. This leader has been focused on developing frequent team building activities and instigating constant communication and feedback within team members and with the leader [itself | himself]. For example, some time ago I was feeling extremely demotivated regarding my work because I was stressed about a personal situation which was affecting my work. My leader noticed it and asked me the reasons of my apathy and distraction. We talked-and I really felt I could openly talk about it-and [it | he] proposed a different project for me to work on, which was easier to handle during a personal hard time. [It | He] also suggested I finish work earlier and spend time in nature and meditating instead to help ease my mind and improve my mental health. I did so and felt better. Whatsmore, feeling heard and cared for by my leader made my work days easier and increased my well-being during and out of work.